

# THE RAILWAY GAZETTE

Price: Two Shillings

FRIDAY, MAY 26, 1961

Annually £5 by post

## Power to Stop gives Freedom to Speed



Brakes designed and made in England by  
**WESTINGHOUSE BRAKE AND SIGNAL CO. LTD.**  
82 YORK WAY, KING'S CROSS, LONDON, N.1

The new Diesel Electric Pullman Trains  
built by Metropolitan-Cammell Carriage and Wagon Co. Ltd.  
for the Pullman Car Co. Ltd.

are fitted with the



### TWO-STAGE ELECTRO-PNEUMATIC HIGH-SPEED BRAKE

the modern brake system which automatically  
provides increased braking pressures at high speeds.



A.E.I./B.R.C.W. Bo-Bo 25 kv. 50  
cycle AC Electric locomotive

# SKF

## in British Railways main line electrification

Illustrated here are four types of main line electric locomotive built under British Railways Modernisation Plan. **SKF** spherical roller bearing axleboxes have been specified for each, thus ensuring the smoothness and absolute reliability demanded by intensive traffic conditions.



B.R. Southern Region Bo-Bo 2500  
h.p. 750v. DC Electric locomotive



**THE SKEFKO BALL BEARING COMPANY LIMITED · LUTON · BEDS**

OVER 1,750,000 **SKF** ROLLER BEARING AXLE BOXES HAVE NOW BEEN SUPPLIED TO THE RAILWAYS OF THE WORLD



The pattern shown in the rail section above was produced by the photo-elastic method. A model of the section was cut out from a  $\frac{1}{4}$ " thick sheet of a transparent material, mounted in a frame at a tilt of 1 in 20 and loaded to represent service conditions. Polarised light projected through the model produces the stress pattern on a screen. The fringes (or bands) on the pattern join up points of equal shear stress. The actual value of the shear stress

along any fringe is proportional to the number of fringes counted from an unstressed area or counted as they spread outwards from the regions of highest stress, as the loading is increased. The method is useful for the comparison of different rail sections and particularly for the examination of proposed new sections. It can be complementary to the measurement of strains in actual rails loaded in a special test frame.

RAILS · FISHPLATES · BASEPLATES

STEEL SLEEPERS

·HEY-BACK' and ·WISCLIP' PATENT RAIL FASTENINGS

**WORKINGTON**

**IRON AND STEEL COMPANY**

*Workington · Cumberland*


Railway Department: 8/10 Grosvenor Gardens, Victoria, London S.W.1. Phone: Sloane 4533. Grams: Unisteels, Sowest, London

*A branch of THE UNITED*

**STEEL**  
COMPANIES LTD

W113

A



**... GOOD-BYE PICCADILLY**

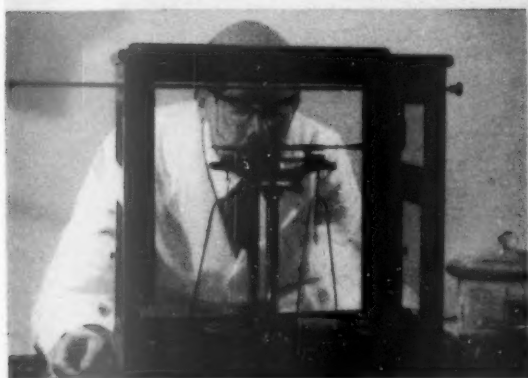
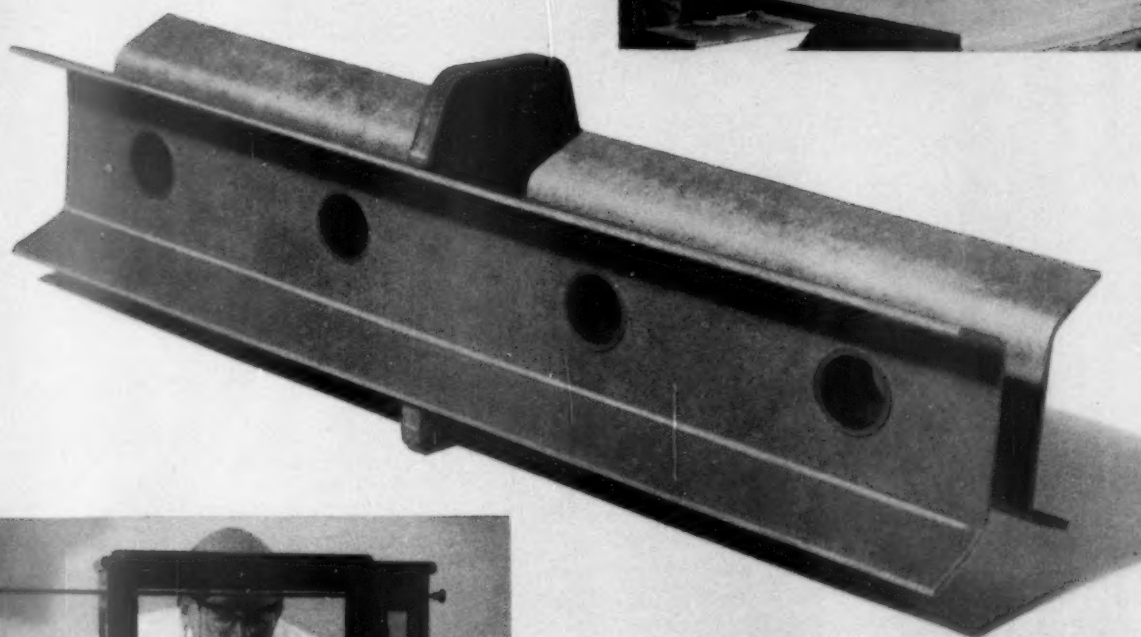
It may be a long way home but every day Londoners find it's quicker by tube. As a matter of interest, two-thirds of the traction motors on trains in service on London's Underground are built by the G.E.C. With the completion of recent orders which total about £3,000,000, the G.E.C. will have supplied over 6000 railway traction motors to London Transport since 1925.

**G.E.C.** EXPERIENCE IS AT THE SERVICE OF LONDON TRANSPORT

THE GENERAL ELECTRIC COMPANY, LIMITED OF ENGLAND TRACTION DIVISION BIRMINGHAM 6



# ALL ALONG THE LINE— IT'S Castle FIBRE



## TRACK INSULATION

Specially made to British  
Standards and Tested for  
Quality Throughout.



### Vulcanised Fibre Ltd

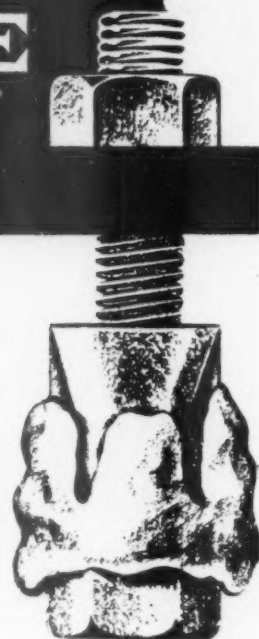
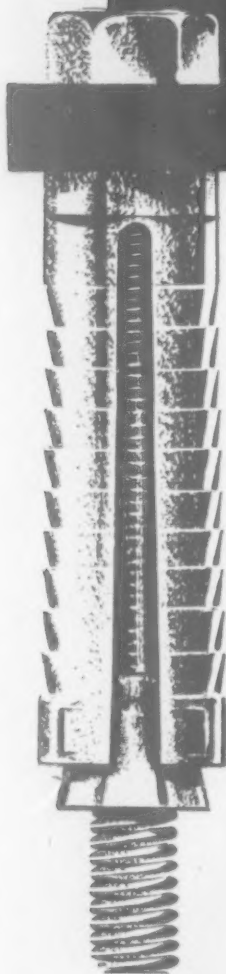
BROADFORD MILLS GUILDFORD ENGLAND

PHONE: GUILDFORD 5214-7

GRAMS: VULCANISED, GUILDFORD

TELEX: 5529

# A SECURE ANCHORAGE



Where a heavy article must be positioned *before* it is bolted to concrete, brickwork or masonry — use Expandabolts. If the machinery or equipment can be placed over a bolt previously fixed — choose Anchor Bolts.

Both these simple fixing devices provide a secure anchorage which remains firm under the most violent movement.

## HERE'S HOW THEY WORK :

### EXPANDABOLTS

A hole is made and the complete bolt (set screw, saw-toothed split-sleeve and cone wedge) is placed in it. The set screw is removed and the article placed in position. The set screw is reinserted and tightened. This draws the wedge into the split-sleeve, forcing the saw-teeth to grip the concrete.

### ANCHOR BOLTS

A hole is made, the bolt is inserted and the wedge is driven into the lead spreader, thus locking the bolt in position. The article to be fixed is then placed over the protruding bolt, and the nut is tightened.

# philplug

## EXPANDABOLTS AND ANCHOR BOLTS



DISTRIBUTED BY:

EXPANDITE LIMITED, CHASE ROAD, LONDON, N.W.10

Telephone: ELG 4321 (10 lines) ELG 1551 (10 lines) Telex 25420

Trafford Park Road, Manchester 17 Telephone: Trafford Park 1285/6

36 Great North Road, Newcastle-upon-Tyne 2 Telephone: Newcastle 23992

EXPANDITE (IRELAND) LIMITED, Greenhills Road, Walkinstown, Dublin Telephone: 501512

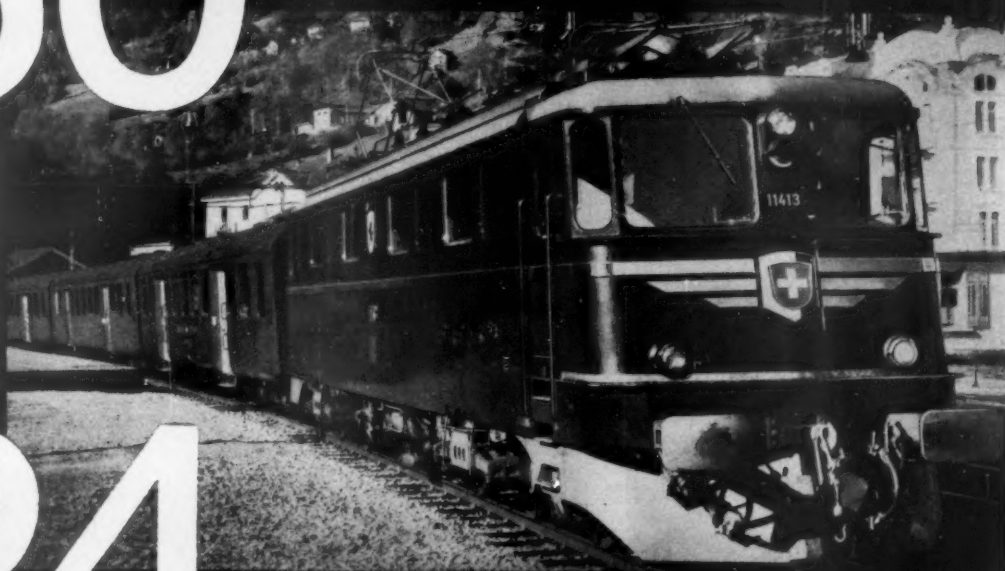
ASSOCIATES AND DISTRIBUTORS THROUGHOUT THE WORLD

# SLM

90 years experience  
in design and manufacture  
of locomotives and railcars!

# 50

of these 6000 HP Co-Co type locomotives are giving excellent service on the Gothard and the Simplon lines of the Swiss Federal Railways.

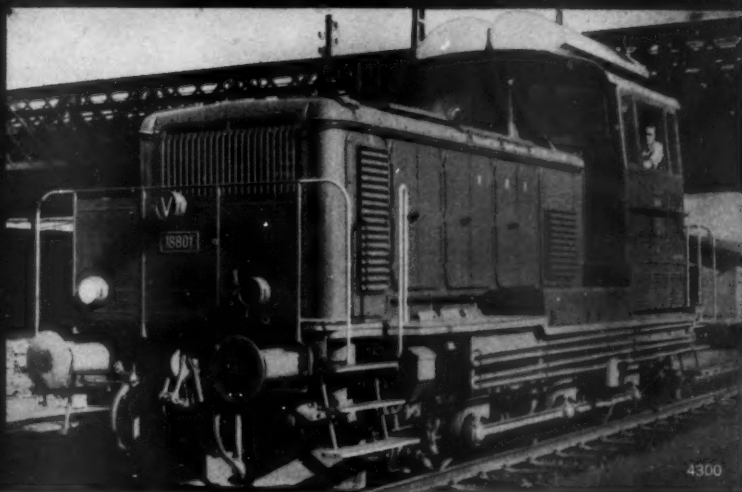


# 24

To meet traction requirements due to increasing traffic 24 more of these powerful and reliable engines have been ordered lately.

# 35

A further contract for the supply of 35 Diesel-electric locomotives, 600 HP each, fitted with SLM traction Diesel engines has also been placed by the Swiss Federal Railways.



Swiss  
Locomotive and Machine Works  
Winterthur



## Maybach diesels power the new Hymek locomotives

Bristol Siddeley Maybach\* diesel engines have been chosen for the new Hymek diesel-hydraulic locomotives. 95 of these Type 3 locomotives have been ordered for main-line use on British Railways Western Region. This now brings the total order placed with Bristol Siddeley for British Railways to 286.

### DESIGNED FOR ECONOMIC OPERATION

Bristol Siddeley Maybach rail traction diesel engines range from 384 to 2,000 hp and embody design features which produce more efficient operation in terms of lower wear, greater reliability and easier servicing.

The immensely strong, roller bearing disc-webbed crankshaft, for example, is extremely rigid in its tunnel housing.



Disc-webbed, roller bearing crankshaft and tunnel housing

This results in very low main and big-end bearing wear. The pressure-oil cooling of the pistons gives effective heat dissipation which reduces liner and gas ring wear to a minimum.

Since the majority of components are identical in all models, spares stocks can be cut and servicing is simplified through interchangeability.



Maybach diesel engine being installed in D800 Class at Swindon.

### WORLD-WIDE SERVICE

Maybach engines are in service all over the world, and have built for themselves an unsurpassed reputation as the most efficient diesel engines of today. This reputation, backed by the efficient Bristol Siddeley after-sales and spares service, offers the most satisfactory solution to all rail traction requirements.

For further information, please write to: Power Sales Manager, Power Division, Bristol Siddeley Engines Limited, PO Box 17, Coventry, England. Cables: Brisidair, Coventry.

*\*Manufactured in the UK under exclusive licence from Maybach-Motorenbau GmbH.*

### BRISTOL SIDDELEY ENGINES LIMITED

TURBOJETS - TURBOFANS - TURBOPROPS - RAMJETS - ROCKET ENGINES  
MARINE AND INDUSTRIAL GAS TURBINES - MARINE, RAIL AND INDUSTRIAL  
DIESEL ENGINES - PISTON ENGINES - PRECISION ENGINEERING PRODUCTS



# rugged robust reliable

plus all the accuracy you need



## SMITHS locomotive instruments

Once you fit a SMITHS instrument or control unit you can forget it. They are really rugged and stand up to the toughest assignment. Day-in, day-out, month-in, month-out with little maintenance they will continue to function accurately and reliably. The range of SMITHS Rail Instrumentation and Protection equipment includes:—

Distance Counters • Speed Indicators and Controllers  
Engine Revolution Indicators • Pressure Gauges  
and Running Meters • Thermometers • Vacuum  
and Pressure Brake Gauges • Ammeters and  
Voltsmeters • Fuel Level Gauges and Transmitters  
Automatic Protection Devices • Flexible Fuel Hoses  
Remote Position Indicators for Controllers • Thermo-  
stats • Cabheaters and Demisters • Instruments for  
heating and air conditioning systems

fit and forget

SMITHS locomotive instruments

*they're built to last... and last*

Write for full details to

# SMITHS

INDUSTRIAL DIVISION

The industrial business of  
S. Smith & Sons (England) Ltd,  
including the marketing of  
industrial products under  
the trade marks of  
Smiths and Kelvin Hughes

Chronos Works, North Circular Road, London NW2 • Phone: GLA 6444

# METCALFE-OERLIKON

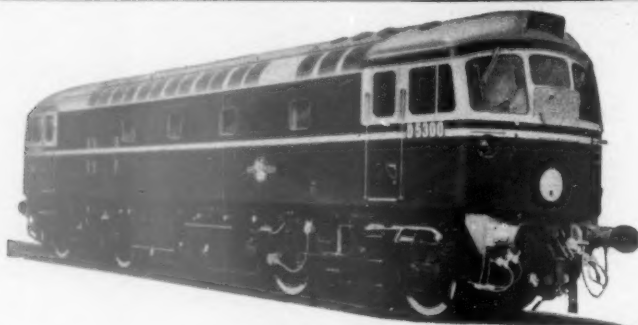
## MODERN BRAKE EQUIPMENT

### 1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Derby, Crewe and Darlington works of the B.T.C.

176 of these locomotives are to be supplied with Sulzer Engines and Power Equipment by A.E.I. Traction Division.

Metcalfe-Oerlikon brakes are also fitted



### 1160 H.P. Type '2' Diesel-Electric Locomotives.

Built by the Birmingham Railway Company & Wagon Co. Limited.

47 of these locomotives have Sulzer Engines and Crompton Parkinson Power Equipment.

Metcalfe-Oerlikon brakes are also fitted.

### 1100 H.P. Type '2' Diesel-Electric Locomotives.

Built by the North British Locomotive Company Ltd.

They have N.B.L./M.A.N. Diesel Engines and General Electric Company Power Equipment.

Metcalfe-Oerlikon brakes are also fitted to 38 of these.



The above are just three of the many types of Main Line Diesel-Electric Locomotives now in service with British Railways and all are equipped with 'Metcalfe-Oerlikon' patent Vacuum Controlled Air Brake Equipment.

**Undiminishing Performance**  
**Light Weight**  
**Friction Free Valves**  
**Reduced Maintenance**  
**Easy Installation**

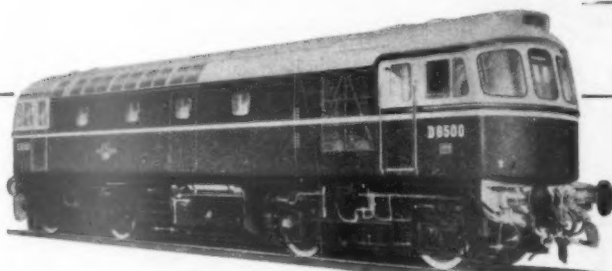
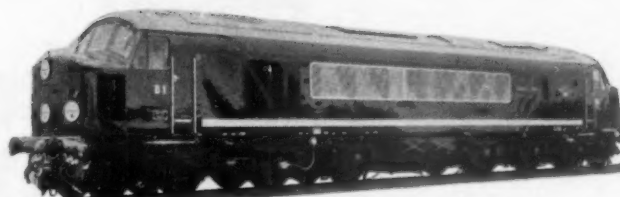
Suppliers to the World's Railways since 1870

# DAVIES & METCALFE LIMITED

# METCALFE-OERLIKON

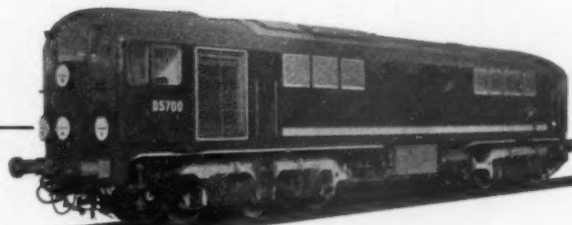
## MODERN BRAKE EQUIPMENT

- 10 - 2300 H.P. Type '4' Diesel-Electric Locomotives. Built by the Derby Works of the B.T.C. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. 10 of these Locomotives are in service with British Railways and a further 137 are now building.

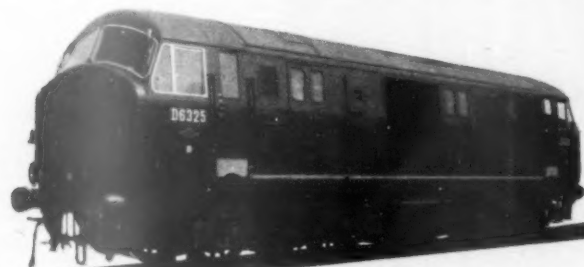


- 1550 H.P. Type '3' Diesel-Electric Locomotives. Built by the Birmingham Railway Carriage & Wagon Co., Ltd. and fitted with Sulzer Engines and Crompton Parkinson Electrical Equipment. 98 of these Locomotives are to be supplied, and these are arranged for working with either 'Vacuum' or 'Air' braked trains through a single Driver's Brake Valve.

- 20 - 1200 H.P. Type '2' Diesel-Electric Locomotives. Built by Associated Electrical Industries Ltd. and fitted with Crossley Brothers Ltd. engines. These Locomotives are now in service on British Railways.



- 52 - 1100 H.P. Type '2' Diesel-Hydraulic Locomotives being built by the North British Locomotive Co., Ltd. with N.B.L./M.A.N. Engines and Voith/North British Hydraulic Transmission.



**THE ABOVE LOCOMOTIVES ARE EQUIPPED  
WITH METCALFE-OERLIKON BRAKE EQUIPMENT**

JUST ANOTHER FOUR OF THE  
MANY TYPES OF MODERN MAIN  
LINE LOCOMOTIVES NOW IN  
SERVICE WITH BRITISH RAIL-  
WAYS. ALL ARE EQUIPPED  
WITH METCALFE-OERLIKON  
MODERN BRAKE EQUIPMENT.

**ENGINEERS · ROMILEY · ENGLAND**

TELEPHONE: WOODLEY 2626

TELEGRAMS: EXHAUST, ROMILEY



THE PLAN to install diesel locomotives throughout British Railways takes one more step forward with the liaison of two great names in the engineering world.

Seventy-six sets of engine transmission equipment, which include generators, traction motors and control equipment have been ordered from the Brush Electrical Engineering Co. Ltd. for British Railways Type 4 diesel electric locomotives. In conjunction with this, diesel engines of 2,500 h.p. will be supplied by Sulzer Bros. (London) Ltd. These are now being built in the workshops of Vickers-Armstrong (Engineers) Ltd. The knowledge and craftsmanship of these two organisations — Brush and Sulzer — are thus being combined to produce first class diesel electric locomotives in conjunction with British Railways.

BRUSH ELECTRICAL ENGINEERING COMPANY LIMITED • LOUGHBOROUGH • ENGLAND

A member of the Hawker Siddeley Group





# STC PUBLIC ADDRESS & LOUDSPEAKER SYSTEMS FOR RAILWAYS

STC design and manufacture a variety of equipment and instruments for sound reproduction purposes, and a special department is concerned with the planning and installation of complete loudspeaker systems. For more than thirty years the Company has been engaged in the engineering and installation of large and small sound reproduction systems, indoors and outdoors, permanent and temporary. Many of the installations have been of the most complex nature and STC sound engineers have the advantage of wide practical experience in the choice and siting of equipment to achieve the best possible distribution of sound with minimum deleterious effects. Particularly valuable experience is available for the acoustic grouping of loudspeaker networks.

## STATION ANNOUNCING SYSTEMS

Complete station announcing systems, including microphones, loudspeaker networks, amplifiers, control desks or panels and wiring.

## TRAFFIC SYSTEMS

Order-passing systems for communication between signal cabins and marshalling yards.

## PASSENGER CAR SYSTEMS

Systems for the dissemination of information to passengers on long-distance trains from microphones in strategic positions—usually guard's compartment, restaurant car and driver's compartment.

## SPECIAL FACILITIES

STC sound reproduction systems can incorporate facilities for fire warning broadcasts and for automatic broadcast of time signals.

## ACCESSORIES

STC sound reproduction equipment is also supplied as individual units and accessories. A range of high quality microphones is available together with stands and cables. Amplifying equipment can be supplied with outputs from 15 to 500 watts. Indoor and outdoor loudspeakers and loudspeaker cables are available.



61/3 CPA

## Standard Telephones and Cables Limited

Registered Office: Connaught House, Aldwych, London W.C.2

PUBLIC ADDRESS DEPARTMENT

HIDE PLACE WORKS · ESTERBROOKE STREET · LONDON · S.W.1

# 1837



## A TRADE NOTICE OF SOME IMPORT

Gentlemen of high esteem who wish to purchase  
superlative Nulac paint finishes for horseless carriages  
including steam engines, passenger carriages  
and all manner of rolling stock may wish to contact  
ROBERT KEARSLEY & COMPANY OF RIPON, YORKSHIRE  
who are active today as they will be in 1961



TELEPHONIC COMMUNICATION MAY BE MADE AT RIPON 415/6

WIRELESS TELEGRAPHY MESSAGES DIRECTED TO  
KEARSLEY, RIPON

---

## THANK YOU

There's  
something  
special about  
this tool...



*A Hicycle grinder buffing stainless steel castings at the works of Stainless Equipment Ltd. London.*

### Here's why ...

Hicycle tools are of special interest to you—

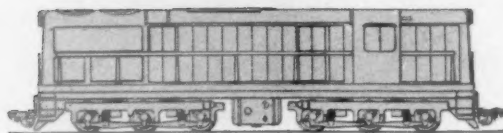
- **INCREASED PRODUCTION** A constant speed is maintained irrespective of load.
- **REDUCED WEIGHT** High sustained motor speed gives increased power to weight ratio, and so makes for effortless operation.
- **LESS MAINTENANCE** There are no commutators, brushes or brush gear to maintain, and the squirrel cage rotor cannot burn out.
- **GREATER ECONOMY** A Hicycle tool uses only a fraction of the power of a comparable compressed air tool.
- **MORE SAFETY** The voltage to earth is only 72 volts—safer than tools operating on the usual 200/250 volts.

It causes less fatigue . . . . and yet it does more work! It's a Hicycle electric tool, one of a wide range of heavy duty units which are pushing up production figures in many factories today. Its high performance is due to its constant speed under load. The tool does *all* the hard work which makes operation swift, smooth and effortless. The result is greater output . . . improved finish. Ask for the Hicycle catalogue.



*For a  
better finish  
—faster!*

CONSOLIDATED PNEUMATIC TOOL COMPANY LIMITED  
DAWES ROAD · LONDON · S.W.6



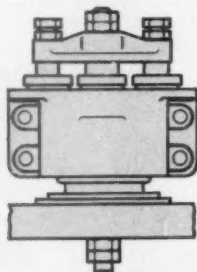
GOING PLACES WITH

**BTR**

## VIBRO-INSULATORS

Going places in East Africa is the A.E.I./Lister Blackstone 'Explorer', fitted—in common with so much of today's rolling stock—with BTR Vibro-Insulators.

Designed to utilize the greatly superior vibration absorption qualities of rubber-in-shear as opposed to rubber-under-compression, Vibro-Insulators are playing an ever-increasing part in railway modernization.



*BTR Vibro-Insulators for Auxiliary Bearing Springs, Bolster Springs, Axlebox Springs, Mountings for Diesel Generator Units, Exhausters and Air-Brake Equipment.*



**BTR Industries Ltd**

BRITISH THERMOPLASTICS & RUBBER MANUFACTURERS  
HERGA HOUSE, VINCENT SQUARE, LONDON S.W.1





# ELECTRICALLY CONTROLLED Railway Sidings

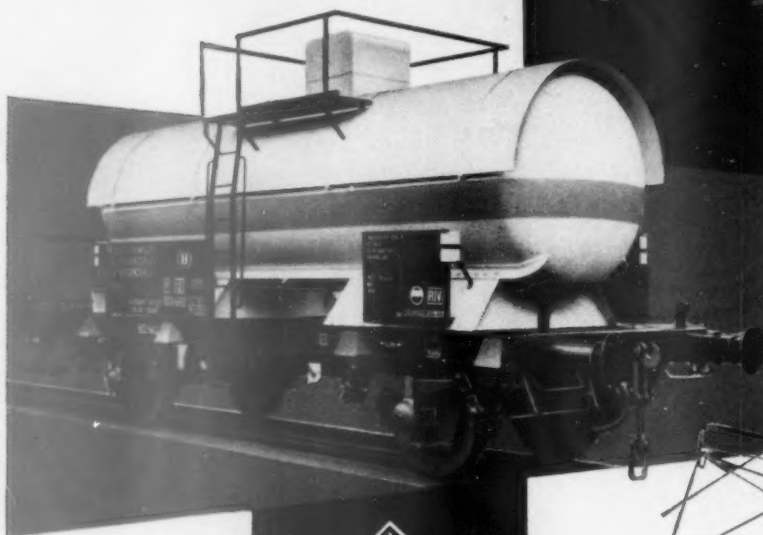
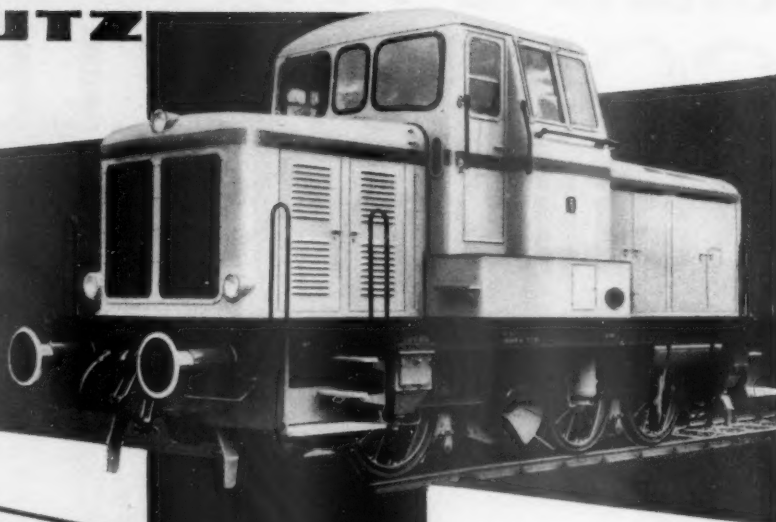


## by SUMMERSON'S

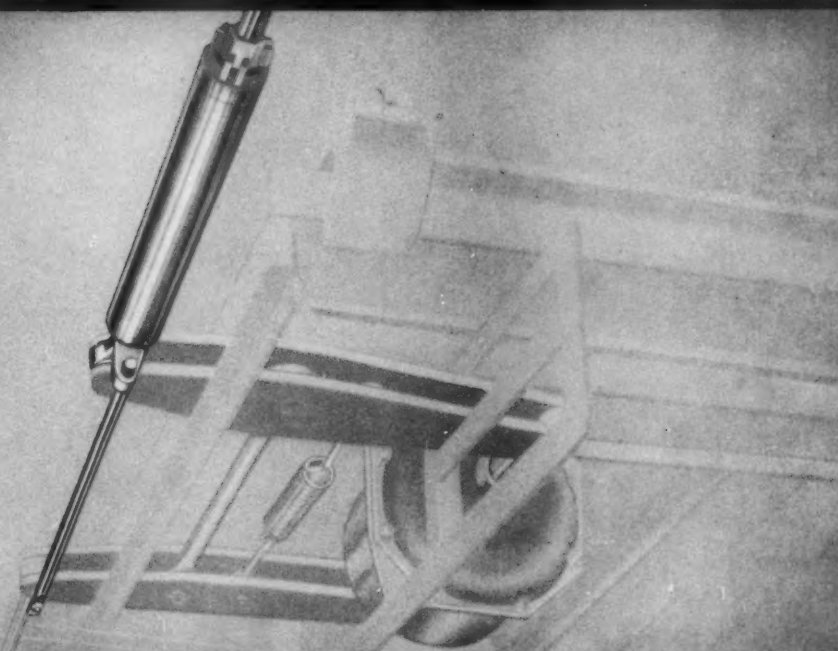
This sidings contract for the North West Gas Board, Mersey Group, had to be laid without disturbing existing gas production. As Consulting Engineers working with the Gas Board engineers, Summerson's surveyed and designed the layout and drew up a specification. As main contractors, Summerson's manufactured and installed the track which consisted of two different designs. One, involved 8,100 yards of track which included 41 turnouts, 12 tandem turnouts and 3 single cross overs, the other consisted of 765 yards of fully guarded track for fixing in concrete to top rail level, including a scissors cross over and turnouts. The main coke sidings have electro-pneumatically operated switches to direct wagons which move from the tippler tables by gravity, into the correct road. Just another example of how Summerson's experienced "know how" enables a difficult installation to be successfully carried out.

MAIN CONTRACTORS: Thomas Summerson & Sons, Ltd. CIVIL WORK: Leonard Fairclough Ltd. ELECTRO-PNEUMATIC EQUIPMENT: Westinghouse Brake & Signal Co. Ltd.

THOMAS SUMMERSON & SONS, LTD.: MOWDEN HALL, DARLINGTON, CO. DURHAM. Telephone: DARLINGTON 5226  
London Office: 5a Dean's Yard, S.W.1. Abbey 1365

**DEUTZ****DIESEL LOCOMOTIVES****WAGONS****SUBURBAN AND  
INTER-URBAN RAILWAYS****KLÖCKNER-HUMBOLDT-DEUTZ AG · KÖLN, WERK WESTWAGGON**

# SAB DOUBLE-ACTING RAPID-WORKING BRAKE REGULATOR TYPE DRV



## IN MORE THAN 50 COUNTRIES

Although the productions of the SAB Company cover a wide range of empty/loaded braking devices, the product most closely associated by railway engineers with the symbol SAB is the double-acting, rapid-working SAB Brake Regulator.

SAB Brake Regulators have been delivered to leading Railways in more than 50 countries all over the world. In most of these countries, SAB Brake Regulators have been adopted as a standard component of the brake equipment. They have gained a reputation for efficiency and reliability, resulting in an ever increasing number of installations on all types of railway vehicles.



## BRAKE REGULATOR TYPE DRV

The most advanced member of the SAB slack adjuster family is the fully automatic, double-acting, rapid-working Brake Regulator Type DRV, the result of more than 40 years of specialised experience of automatic slack adjustment.

The DRV regulator is built into the brake rigging as part of a pull rod. It rapidly takes up or pays out slack, thus maintaining correct brake block clearances. In addition it contributes to easier replacement of worn brake blocks, no manual adjustment being required after the operation. The DRV Brake Regulator also makes it possible to use a simple mechanical empty/loaded braking device.



## TECHNICAL ASSISTANCE

Whenever brake slack adjustment and empty/loaded braking problems require an effective solution, it is advantageous to consult SAB.

The SAB Company has built up an important service organisation which, with its expert knowledge, is ready to deal with any problem relating to brake rigging and brake installation for all types of railway vehicles.

The SAB Service Engineering Department checks proposed brake rigging designs and provides detailed installation drawings as a service to customers. It also assists whenever necessary at the actual mounting on the vehicle.

# BROMSREGULATOR

**MALMÖ — SWEDEN**



# MANY THOUSANDS IN USE

ON  
BRITISH RAILWAYS,  
LONDON TRANSPORT  
AND IN  
VARIOUS PARTS OF  
THE WORLD



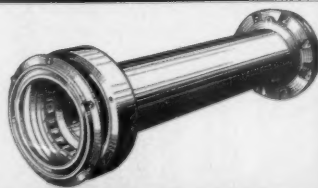
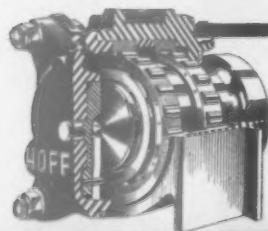
On locomotives,  
electric stock, coaching stock,  
and railcars, the story is one of long  
life—many 'not out' mileages well in excess of 1,000,000—  
extreme economy in labour and lubricant and freedom from hot  
boxes.

Hoffmann Roller Bearing suspension units for traction motors  
have also proved reliable and free from wear.

Performance is equally good in frigid, torrid or temperate climes.

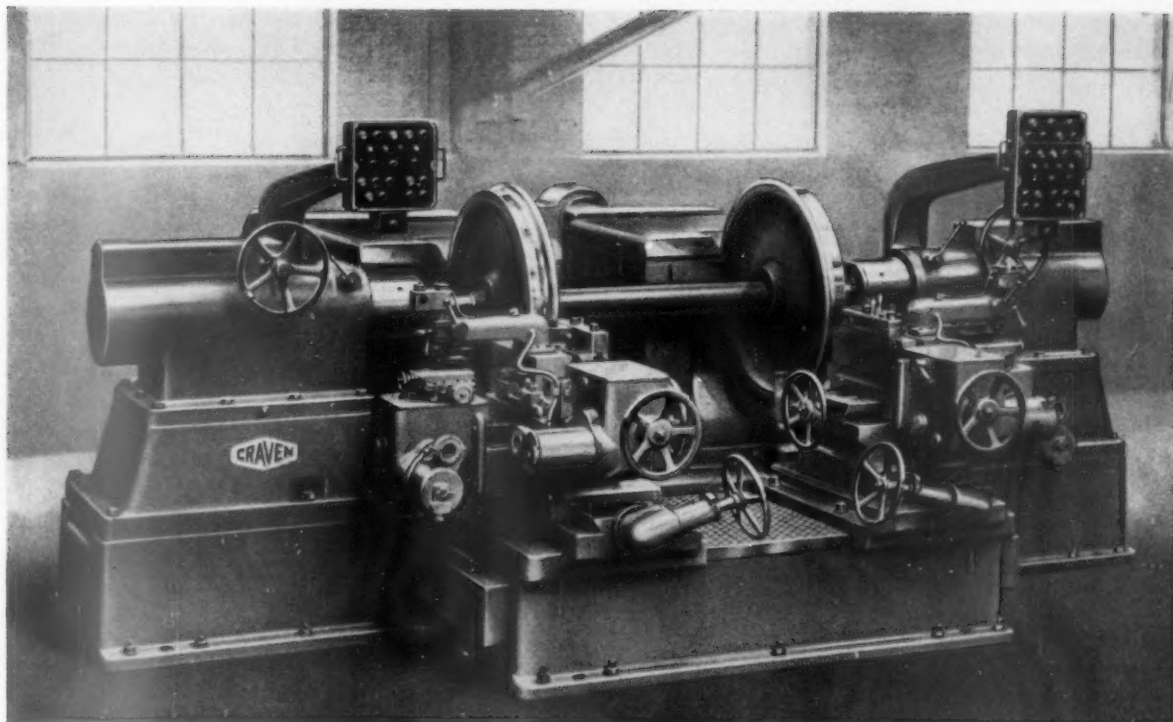
## H O F F M A N N

### ROLLER BEARING AXLEBOXES AND TRACTION MOTOR SUSPENSION UNITS



THE HOFFMANN MANUFACTURING CO. LTD., CHELMSFORD, ESSEX





*Floor-type Friction Roller Drive Wheel Lathe*

**FLOOR-TYPE AND PIT-TYPE**

**WHEEL LATHES**

**WITH FRICTION ROLLER DRIVE  
AND ELECTRICAL PROFILING**

Recent developments in Craven Railway Wheel Lathes utilise carbide tools for re-turning diesel and electric traction wheels. The floor-type lathe deals with dismantled wheel sets, either with or without their axle-boxes in position; the pit-type lathe re-turns wheel sets in position on the vehicle. The drive is by two pairs of hydraulically-loaded friction rollers—one pair to each wheel—giving a balanced, self-contained thrust upon the wheel rims to transmit a high driving torque without risk of distortion. Tread and flange form profiling is by Craven patent fully-automatic, single-point electrical profile copying equipment.

Patent Nos. 849291 & 833326,

and application No. 29749/59.



**MACHINE TOOLS**

**CRAVEN BROTHERS  
(MANCHESTER) LTD**

**VAUXHALL WORKS • REDDISH • STOCKPORT • ENGLAND**

CMT 18

B\*



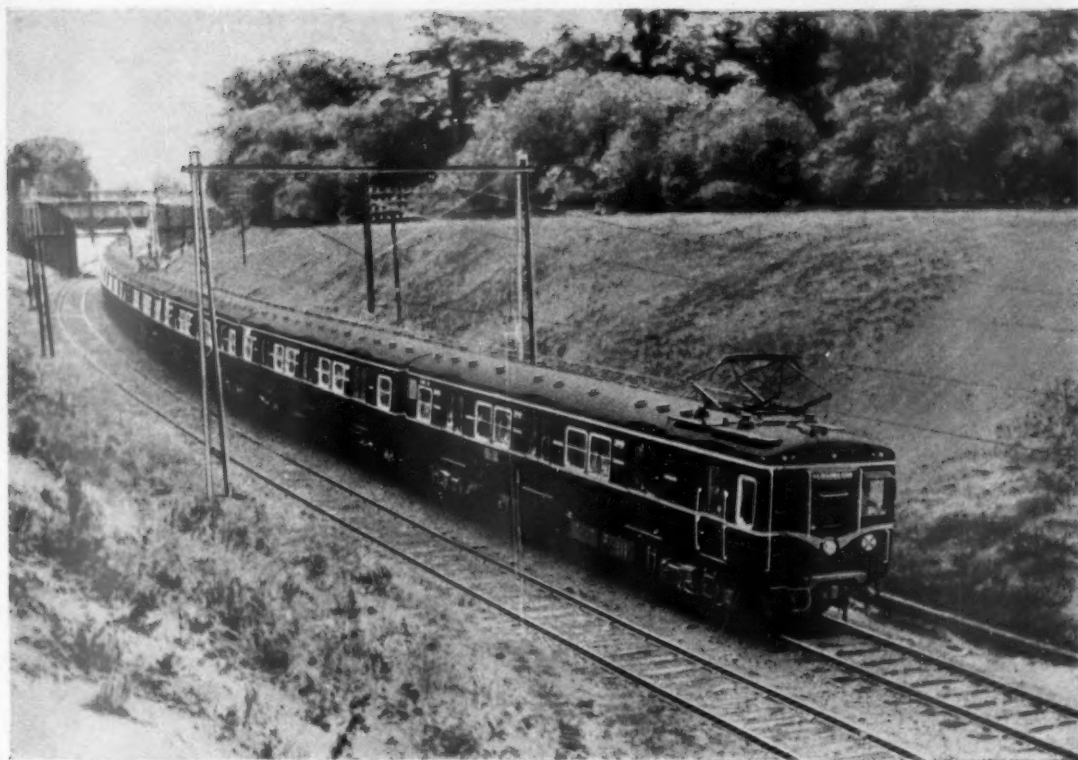
One of the 112 trains, with 'ENGLISH ELECTRIC' equipment operating at 25 kV. A.C., in service with the Eastern Region of British Railways. A repeat order was received and is in course of delivery.

'ENGLISH ELECTRIC' have equipped many thousands of motor coaches for suburban and main line services throughout the world.

# 'ENGLISH

*in association with:*

**VULCAN FOUNDRY**

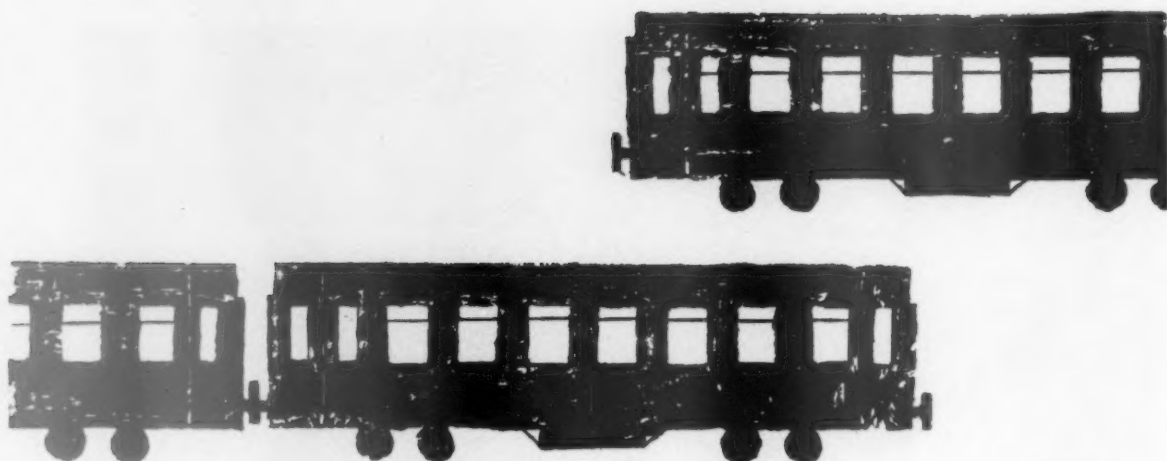


'ENGLISH ELECTRIC' have equipped 90 motor coaches and 120 trailer coaches for service with the Victorian Government Railways, Australia. Further units of this type are now under construction.

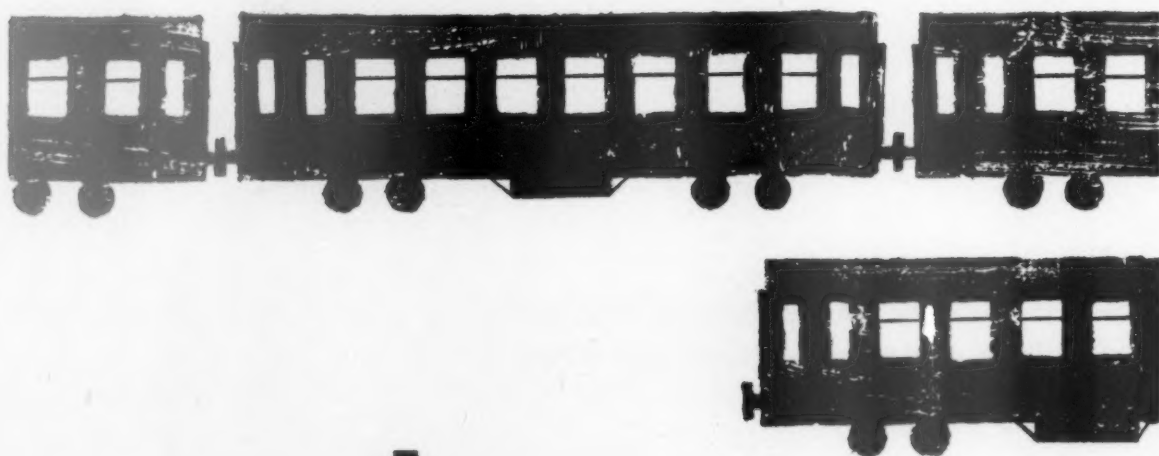
In the field of electric traction 'ENGLISH ELECTRIC' are leaders in the development and application of both A.C. and D.C. systems.

# ELECTRIC'

**ROBERT STEPHENSON & HAWTHORNS**



**SIGNAL SUCCESS** Aluminium in rail transport lessens deadweight and adds payload. It means less maintenance, greater flexibility in structural methods. Imperial Aluminium Company knows all about this. **IMPALCO** aluminium is being used in a very big way for London Transport District Line and Piccadilly Line rolling stock, for British Railways diesel-car units, diesel-electric and diesel-hydraulic locomotives. Strong enough for structural members, light enough for body panelling, durable and versatile, **IMPALCO** aluminium epitomises the transport trends of tomorrow.



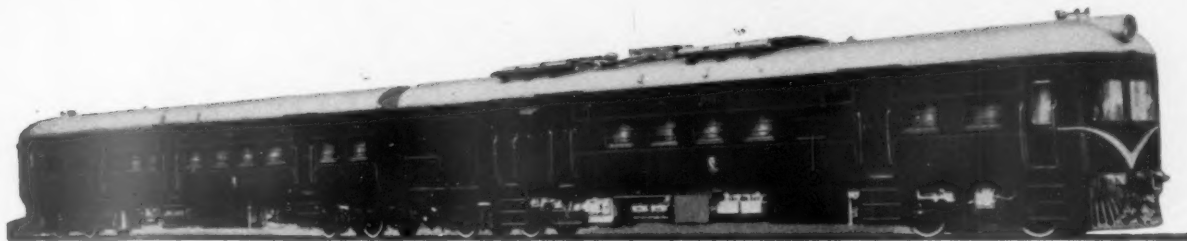
**impalco**  
aluminium



Imperial Aluminium Company Limited • Birmingham



# DREWRY RAIL CARS

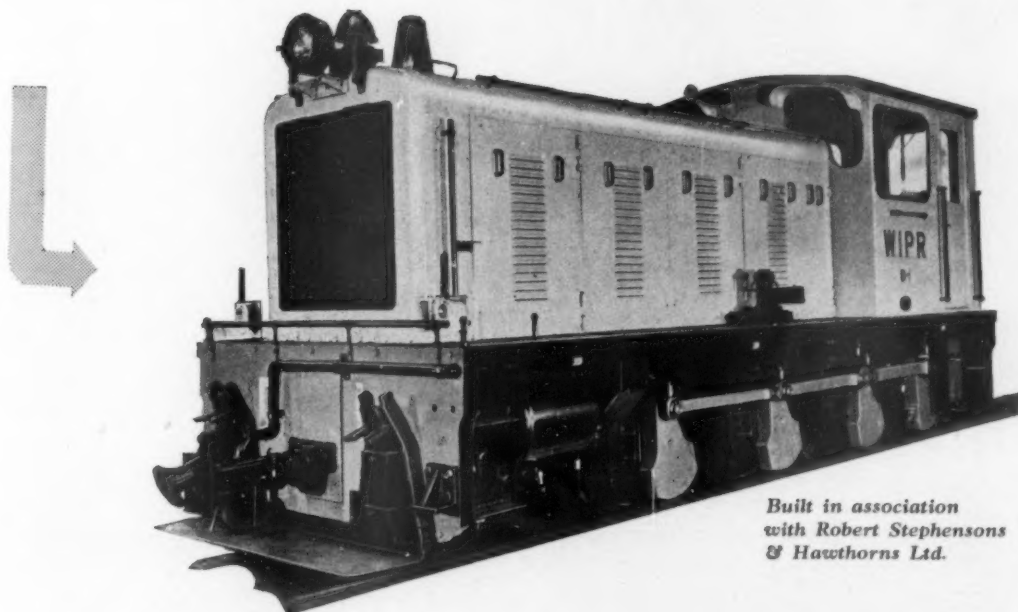


*Built in association with  
The Birmingham Railway Carriage  
& Wagon Co. Ltd.*

## WITH MECHANICAL OR HYDRO-MECHANICAL TRANSMISSION

The upper illustration shows one of two Twin Car Units shipped this year to the Nigerian Railway Corporation, equipped with twin underfloor engines totalling 400 h.p. and multiple-speed epicyclic transmission with automatic control. The lower illustration is one of a number of 30-ton metre gauge Drewry locomotives recently shipped to Portuguese India, for freight and passenger duties.

## AND LOCOMOTIVES



*Built in association  
with Robert Stephenson  
& Hawthorns Ltd.*

**THE DREWRY CAR COMPANY LTD.**

CITY WALL HOUSE, FINSBURY PAVEMENT, LONDON, E.C.2  
TEL.: MONARCH 0671 GRAMS: INNEAL, PHONE, LONDON



*The photographs show, above, the new bays at the Blackwood factory and, bottom left, the Transformer Factory at Treforest Trading Estate.*

The success of our research, designs, and manufacturing policy in the field of switchgear is clearly indicated by our continuous expansion and the confidence shown in S.W.S. products throughout the world.

The fact that S.W.S. equipment is repeatedly 'first choice' confirms this confidence and an expanding organisation such as ours needs more space to meet the consequent ever-growing demand for our products. The current building programme includes factory and office extensions, a new research and laboratory block and a new transformer works.



**SOUTH WALES SWITCHGEAR LIMITED**

BLACKWOOD · MONMOUTHSHIRE · WORKS AT TREFOREST AND BLACKWOOD  
SWITCHGEAR · FUSE-SWITCHGEAR · TRANSFORMERS · CONTROL BOARDS

# JOHN BULL



## TRACTION MOTOR VENTILATING BELLOWS

Exceptionally tough and flexible, John Bull Traction Motor Ventilating Bellows are manufactured from specially compounded rubber containing a high proportion of synthetic rubber. They are reinforced with square-woven fabric, bias cut and covered with rubber-impregnated stockinette. The various laminations are moulded into a homogeneous material which is unaffected by oil and heat and retains its resiliency.

Rectangular and Circular types can be made to customers' requirements. Rectangular Bellows can be supplied with plastic rings and Terylene cord cross-ties.

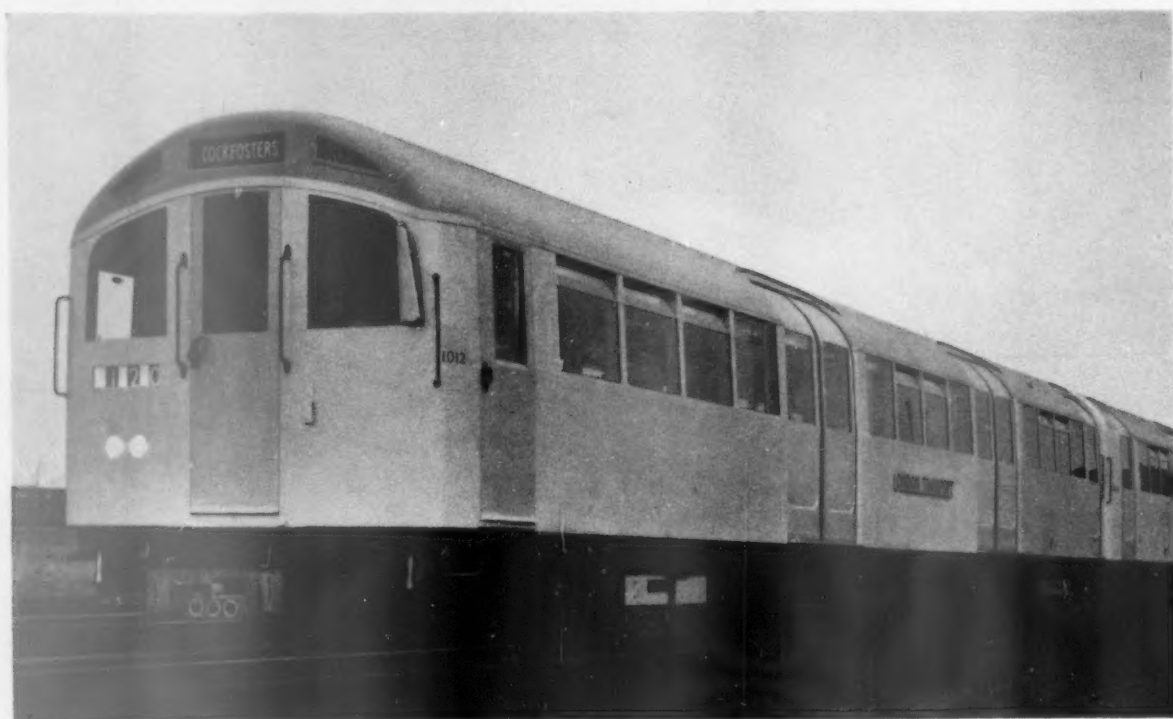
In addition to Ventilating Bellows, John Bull products include Steam Heating Hose and Moulded Rubber products.



JOHN BULL RUBBER CO. LTD. (Mechanical Products Division) LEICESTER  
TELEPHONE: 36531



## TUBE CARS



**FOR PICCADILLY & CENTRAL LINES**

*Photograph by courtesy of  
LONDON TRANSPORT EXECUTIVE*

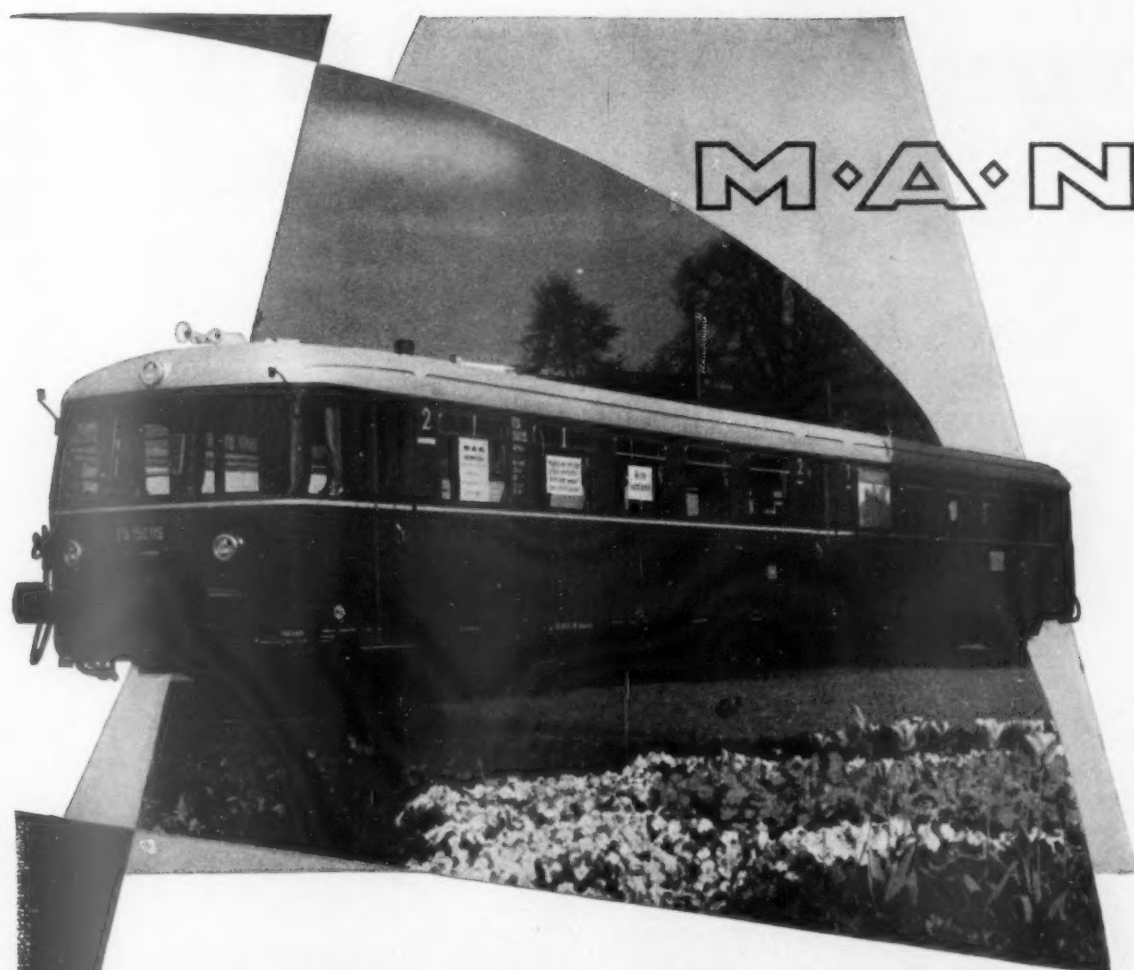
**LONDON TRANSPORT**

397 cars have been completed against the original contract for 589. An order for a further 450, making 1,039 has now been received.

HEAD OFFICE  
SALTLEY · BIRMINGHAM 8

LONDON OFFICE  
VICKERS HOUSE · BROADWAY · WESTMINSTER S.W.1.





**MAN**

## **BATTERY RAILCARS**

for high economy on branch lines and local services.

Electric traction ensures absence of noise and vibrations, high starting acceleration.

Battery operation eliminates capital expenditure for overhead lines.

100 km.p.hr. maximum speed; daily range 250 to 350 km. depending on route schedule (500 km. if re-charged).

**MASCHINENFABRIK AUGSBURG-NÜRNBERG AG. NUREMBERG WORKS**

# **THE MILLS RAIL**

PATENT

## **AND BASEPLATE**

Whenever a Mills Clip  
is fitted, it is fitted  
correctly.



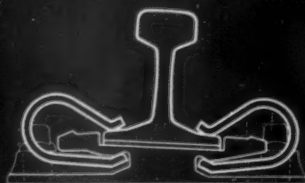
Photograph by  
Courtesy of British Railways



**EXORS OF JAMES MILLS LTD**  
**BREDBURY STEEL WORKS**

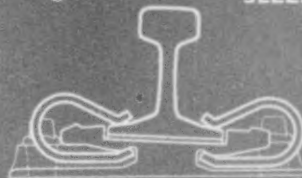
# CLIP

FOR WOOD SLEEPERS



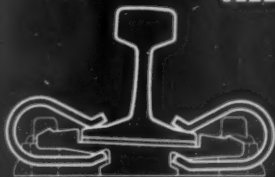
Four-hole baseplate  
with or without  
rubber rail pad.

FOR 'E' TYPE CONCRETE  
SLEEPERS



Two-hole baseplate,  
interchangeable with  
CSI Bullhead Chair.

FOR 'F' TYPE CONCRETE  
SLEEPERS



Small Area  
two-hole baseplate  
for main line use.

Every Mills Clip fitted applies  
a uniform load to the rail  
within a known range.

Very suitable for long welded  
rails and all heavy duty track

**WOODLEY • NEAR STOCKPORT**

Telephone: WOODley 2231 (7 lines) 3431 (7 lines) Cables: Mills Woodley

# STEEL AND THE RAILWAYS



The lifeline of the nation . . . vital to its economy . . . vital to its progress . . . vital in fact to its very existence . . . is the railway network. The key factor in its continued development and operation is steel. Here the Colvilles range of special steels has been developed to meet the needs of the nation today.



## COLVILLES

FITNESS FOR PURPOSE STEELS

COLVILLES LIMITED 195 West George Street, Glasgow C.2.



*across the width of*  
**BRITAIN**



**BRITISH UNITED TRACTION**  
*powered diesel railcars*

The new passenger service operated by British Railways (N.E. Region) has four diesel trains powered by pairs of 250 h.p. B.U.T. diesel engines, with B.U.T. transmission units and control equipment. In all instances, B.U.T. powered railcars are now reducing costs at home and overseas.

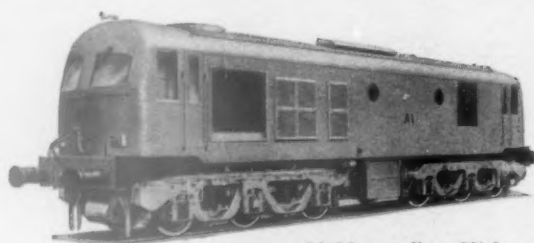
**BRITISH UNITED TRACTION LTD**

USING THE RAIL TRACTION RESOURCES OF A.S.C. AND LEYLAND  
25, BEDFORD SQUARE, LONDON, W.C.1  
TELEGRAMS: GROSVENOR, 1151

# MODERN VACUUM BRAKE SYSTEMS

## for diesel and electric locomotives

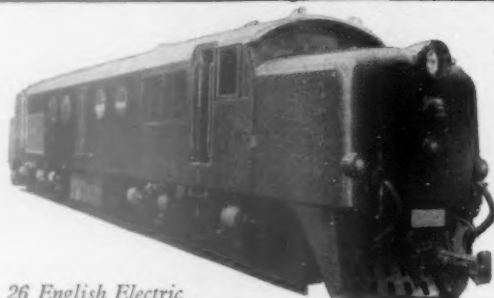
## and for diesel railcar sets



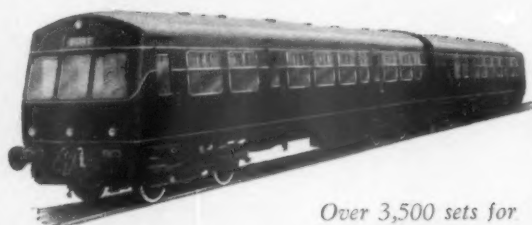
60 Metropolitan Vickers  
Diesel Electric Locomotives for C.I.E.



11 Krauss Maffei Diesel  
Hydraulic Locomotives for Siam.



26 English Electric  
Diesel Electric Locomotives for Malaya.



Over 3,500 sets for  
British Railways.



### FOR LOCOMOTIVES

Gresham's Augmented Vacuum Brake System.  
British Patent No. 732031. Write for List 79.

### FOR DIESEL RAILCAR SETS

Gresham's Quick Release A.I.V. Vacuum Brake System.  
British Patent No. 790657. Write for List 78.



## GRESHAM & CRAVEN LTD

LONDON OFFICE AND SALES: 15 WHITEHALL S.W.1 TRAFALGAR 6611-2  
CABLE: LOCO BRAKE LONDON

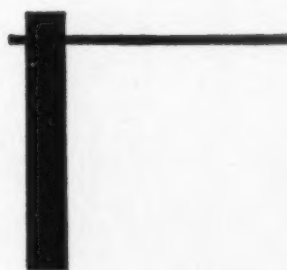
HEAD OFFICE & WORKS: Brake Division, P.O. Box No. 4, Norfolk Street, Worsley Road North, WALKDEN, Manchester  
Tel.: FAO 2041 (14 lines) Grams: BRAKE, PHONE, WALKDEN, MANCHESTER

## Cockerill-Ougrée contributes to the modernization of the railways in Argentina



30 diesel-electric 1750/1600 HP locomotives  
in service on the Argentina State Railways.

With its complete line of diesel-electric locomotives ranging from 600 to 2000 HP, built under licence from Baldwin-Lima-Hamilton Corporation, specially engineered for passenger and freight service, COCKERILL-OUGRÉE has within its wide programme the precise unit which will perform economically and reliably any specific job under any conditions of climate and terrain.



Cockerill-Ougrée has also specialised in the production of diesel-hydraulic locomotives ranging from 200 to 800 HP.



# COCKERILL- OUGREE

---

SERAING (Belgium)

# Confidence in the future...

*is the theme of 37 senior  
railway executives in all  
parts of the world who  
write in*

## OVERSEAS RAILWAYS 1960

---

*A special feature this year—  
supplied at the request of  
many readers—is the provision  
of extended details in tabular  
form regarding operating and  
financial aspects of the  
railways covered*

---

A RAILWAY GAZETTE PUBLICATION  
issued by TOTHILL PRESS LIMITED  
33 Tothill Street, London, S.W.1

---

*Price Seven Shillings and Sixpence — By post Nine Shillings and Sixpence*

---



*There are still  
a few forms of transport  
in which  
**BROWN BAYLEY STEELS**  
do not play  
an important part*

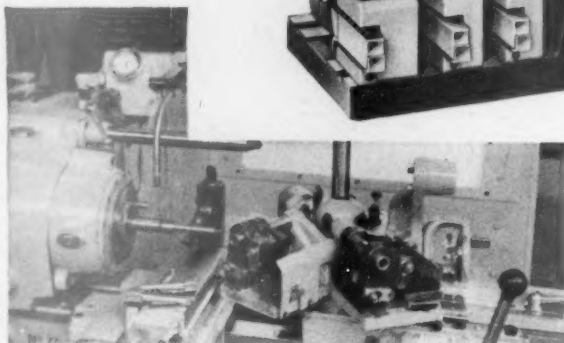
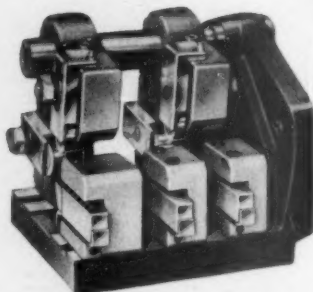


**BROWN BAYLEY STEELS LIMITED • SHEFFIELD**

OA/6074



*For stepped diameters at High Speeds*

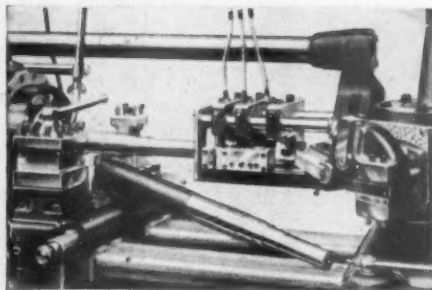
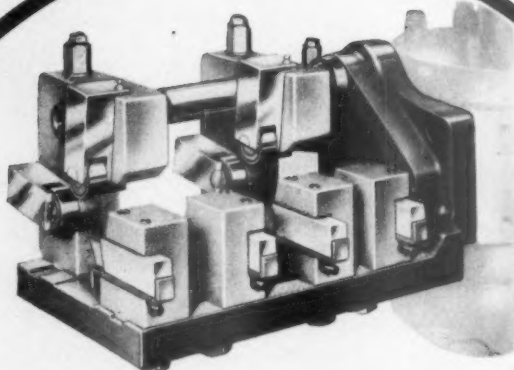


MULTIPLE TOOL HOLDER  
FOR CAPSTAN LATHES

**Ward**

**Multiple  
Roller Turning  
Toolholders**

Constructed for turning one, two, three or more diameters with tungsten-carbide tools, these holders present the tools to the work in quickly set robust slides having independent adjustment. The roller holders are interchangeable and can be locked in any position along the body.



MULTIPLE TOOL HOLDER  
FOR TURRET LATHES

MOST SIZES  
FROM STOCK  
OR EARLY DELIVERY



**H. W. WARD & CO. LTD.**

DALE RD., SELLY OAK, BIRMINGHAM 29

DESCRIPTIVE  
LEAFLETS  
ON APPLICATION

**If you're  
conveying**

**ANYTHING**



**ANY SIZE**



**ANY  
DISTANCE**



**ANY  
PLACE**



**GEO. W. KING**

**WILL CUSTOM-TAILOR A CONVEYING SYSTEM  
FOR YOU ANYWHERE IN THE WORLD**

There is no product we cannot convey. KING'S have specialist groups to deal with small, medium, and large installations for any-sized product.

Just name your product and state your problem—GEO. W. KING will solve it the most economical way possible. And you'll get the benefit of KING know-how and experience—over 40 years—all over the world.

*For further details and illustrated literature write or telephone:—*

**GEO. W. KING LTD**

Argyle Works • Stevenage • Herts. • Telephone: Stevenage 440

A KING representative will be pleased to call on you anywhere in the world.

**KING**

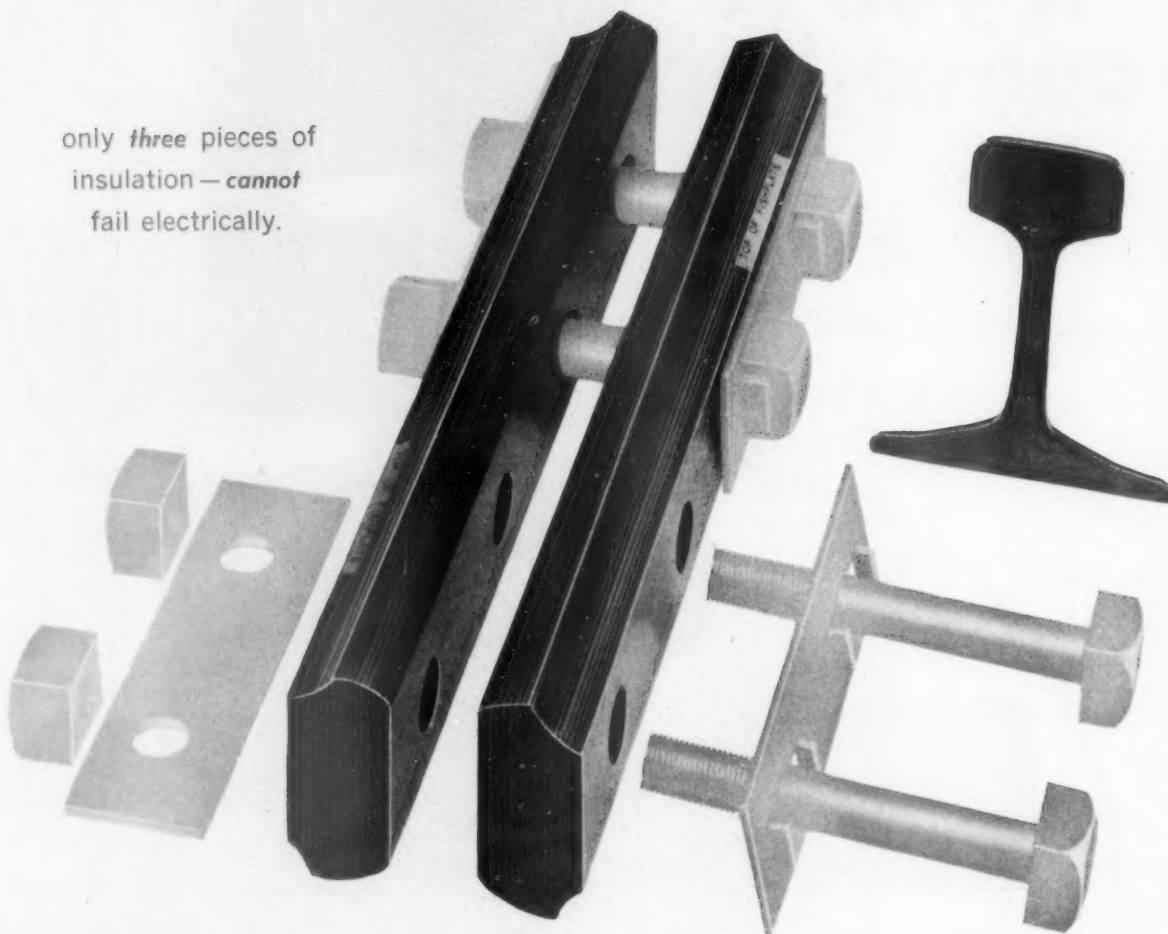


REGISTERED TRADE MARK

OVERHEAD CONVEYORS • FLOOR CONVEYORS • CRANES • HOISTS • SKI-WRACKERS • GRABS • RUNWAYS

# Simplest...most efficient...

only *three* pieces of  
insulation — *cannot*  
fail electrically.



## PERMALI

insulating rail joints

PERMALI LIMITED · GLOUCESTER · ENGLAND



World wide agency representation



# The RAILWAY GAZETTE

INCORPORATING: THE RAILWAY ENGINEER • TRANSPORT • THE RAILWAY NEWS • THE RAILWAY TIMES • RAILWAYS ILLUSTRATED  
HERAPATH'S RAILWAY JOURNAL (ESTABLISHED 1835) • THE RAILWAY RECORD • THE RAILWAY OFFICIAL GAZETTE

A journal of Management, Engineering and Operation

VOL 114

FRIDAY MAY 26 1961

No. 21

## CONTENTS

	PAGE
Editorial notes	581
Indian Budget Estimates for 1961-62	583
British Transport Commission traffic receipts	584
A question of priorities	584
Eastern Region summer services	584
The problems of freight train traffic	585
Letters to the Editor	586
The scrap heap	587
Overseas railway affairs	588
Publications received	589
Re-signalling at Barking	590
Crewe station reconstruction	594
B.I.C.C. research station	596
Personal	598
New equipment and processes	600
News articles	602
Contracts and tenders	605
Notes and news	606
Railway stock market and official notices	608

Editor: B. W. C. Cooke, Assoc. Inst. T.

33, TOTHILL STREET, WESTMINSTER,  
LONDON, S.W.1

Telephone: WHitchell 9233 (24 lines)  
Telegrams: "Trazette Parl London"

### BRANCH OFFICES

GLASGOW: 139, Bothwell Street, C.2 Central 4646  
NEWCASTLE UPON TYNE: Cathedral Buildings, Dean Street, 1  
Newcastle upon Tyne 22239  
MANCHESTER: Century Insurance Building, St. Peter's Square Central 7667-8-9  
BIRMINGHAM: 90, Hagley Road, Edgbaston Edgbaston 2466—3728—3732  
LEEDS: 70, Albion Street Leeds 27174  
BRISTOL: 20, Victoria Square, Clifton Bristol 33873  
Annually £5 by post Single copies, two shillings  
Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.



MEMBER OF THE  
AUDIT BUREAU  
OF CIRCULATIONS

## Aid for exporters

THE Government's endeavours to promote export trade, and to this end to assist smaller British exporters to take their share in overseas markets, were stressed by Mr. Frederick Erroll, M.P., the Minister of State, Board of Trade, when he addressed the National Union of Manufacturers last week. He explained in some detail the Government's services which were now available to exporters and said that for the smaller manufacturer a particularly valuable service consisted in help in finding an agent. The Board of Trade gave a manufacturer a short list from which to make a final choice. This list consisted of two or three names prepared by the department's overseas staff after receiving full details of the product and satisfying themselves of the suitability and willingness of nominees to undertake the agency. The Export Credits Guarantee Department had greatly improved its services. Mr. Erroll claimed that the cover now provided was at least equal to that available to any competitor. He quoted the American publication, *Business Week*, as having said:

"Britain is now in a position of having facilities equal to any country—and in many cases much better!" The department provided a better and cheaper cover than ever before and recently had introduced a special "small exporter" policy which was particularly applicable to those who were new to the use of export guarantees, or, indeed, to export trade. The Government's hope was that many of the department's customers for this small exporter policy would establish a substantial export trade and continue to develop it under the normal export credits guarantee cover. The scope for the small exporter in the railway equipment field is probably far greater than is usually appreciated by manufacturers in this country who are unused to dealing in this market. A study of the "Contracts & Tenders" pages of this journal will give some indication of the very wide variety of products which are in constant demand by railway systems all over the world. The stores departments of railways are in every case among the largest purchasers of equipment of all kinds in their particular territories, for the operation of a railway system, whether large or small, calls for the constant supply of both capital and consumer goods on a scale which is unparalleled in any other business. A list of the items bought by railway stores departments would occupy several pages of this journal.

## Sir Brian Robertson

THIS month Sir Brian Robertson's tenure of office as Chairman of the British Transport Commission comes to an end. The period during which he has served has been unparalleled in its difficulties and in the problems which have arisen. To him must go the major credit for the implementation of the railway modernisation plan. The hesitations and modifications in that plan cannot be laid at his door, and his leaving the Commission at this stage is marked by very real regret on the part of the railway officers and men he has led. On May 17 the Minister of Transport, on behalf of the Government, gave a dinner at Lancaster House in his honour. On the next day senior railway officers entertained him to luncheon, and members of the Commission and of the General Staff gave a formal dinner to him yesterday. Among the presentations made to Sir Brian Robertson have been a portrait by Sir William Hutchison from members of the Commission, and a Persian rug from the senior officers.

## Honour for railwayman

THE election of Mr. K. A. Kindon, Traffic Manager (Tees-side), British Railways, North Eastern Region, to be President of the Tees-side & South West Durham Chamber of Commerce, must give a feeling of satisfaction to railwaymen in general. It is the first time that a President of the Tees-side Chamber has been sought among the ranks of the nationalised industries and Mr. Kindon is to be congratulated on his preferment. If, as Mr. Kindon said in his presidential address at the annual general meeting of the Chamber of Commerce, we are in the midst of a second industrial revolution, perhaps the nation can look forward to as illustrious an era for railways as that which followed the first. We are sure that given the opportunity

and the encouragement, which should be theirs by right, the railways of this country, when re-equipped and modernised, will be second to none.

### Re-signalling at Barking

THE impending electrification of the London, Tilbury & Southend section of the Eastern Region of British Railways, together with the comprehensive rearrangement of the tracks at Barking, has necessitated the complete re-signalling of this section of the line. Barking in particular has two new installations—one for London Transport, which was described in our March 31 issue, and the other for the Eastern Region which is described this week. This installation is on the "entrance-exit" principle. It embodies complete control of the Barking territory and the connections to the new carriage sheds at East Ham, and also gives the signalman surveillance over the adjoining automatic-signalled territory, with telephone communication with every automatic signal. Track-circuit indications from this latter territory are indicated in the signalbox by a new method.

### Paradoxical situation

THE recent report that the Central Transport Consultative Committee has decided to recommend to the Minister of Transport the retention of the Westerham line, on the Southern Region of British Railways, as a social service, underlines the "Alice in Wonderland" state of affairs prevailing. If the Minister were to accept the recommendation, the British Transport Commission, which has been exhorted in two successive Transport Acts to make its undertaking pay taking one year with another, would find itself asked to continue to make a loss on a branch line which, the committee admits, is unlikely to make a profit even if modernised. It was not long ago that Mr. Harold Watkinson, then Minister of Transport, in a debate on the responsibility of the railways to arrange alternative bus services before closing rural branch lines, told the House of Commons that the railways were not a social service. We can only say, with Alice, "curiouser and curiouser."

### A signal at danger

AFTER hearing the evidence at the inquiry held on October 12, 1960, on the collision at New Mills (Central) Station in the London Midland Region of British Railways, Colonel W. P. Reed, Inspecting Officer for Railways, Ministry of Transport, could only conclude that the cause was that the driver of the passenger train involved had passed at danger the starting signal at Strines, the station in rear. As a result, collision occurred with a freight train held at New Mills home signals. In Colonel Reed's opinion, the comprehensive nature of the block controls on that section of line ruled out the possibility of a mistake by either of the signalmen involved. Nor did exhaustion tests support the possibility that the signal had jammed in the off position after its lever had been replaced in the frame behind the freight train. The evidence showed that this signal was not as conspicuous as others. Many of the signals on this route are to be re-positioned when renewed. Colonel Reed made no recommendations.

### Intelligent use of work study

THE intelligent application of work study already is effecting savings of several million pounds a year. This is to be shown by the British Institute of Management on June 14 in its one-day conference at the Connaught Rooms, London, W.C.2. This will be opened by Mr. M. W. Perrin, Chairman of the Wellcome Foundation Limited. Mr. Perrin will be followed by Mr. Arnold G. Kentridge, Principal of the British Transport Commission's Work Study School; Mr. G. P. Wade, Director

of the Engineering Employers' West of England Association's Department of Work Study & Staff Training; Mr. K. W. Gee, Central Work Study Department, Imperial Chemical Industries Limited, and discussion groups. The conference will close with a panel discussion led by the speakers, who will be joined by Mr. Edwin Fletcher, Industrial Relations Adviser, Associated Industrial Consultants Limited. Mr. R. M. Currie, Head of the Central Work Study Department of Imperial Chemical Industries Limited, will take the chair for the day.

### Improved railings to steelworks

ON May 13, freight traffic passed for the first time between Greatham and the new South Works of the South Durham Steel & Iron Co. Ltd. (in the North Eastern Region of British Railways). That works, which is expected to be in full production by the end of this year, has a large potential output: already it is producing up to 20,000 tons a week. To provide rail access, running lines have been installed at both ends of the site. These connect with the internal rail system and sidings. The northern connection is controlled from Cliff House Signalbox, and the southern connection from Greatham Signalbox. All connections are operated by electric point machines and protected by colour-light signals. Colour-light signalling and track-circuiting on the Up and Down main lines between Cliff House and Greatham have enabled Seaton Carew and Seaton Snook signalboxes to be closed. A 33 switch panel with relay interlocking has been installed at Cliff House Signalbox. When signalling is complete, freight trains will be able to proceed direct into and out of the South Works via the main line from Seaton Carew (North end) and Greatham (South end). Local freight train work will be speeded up and main lines freed from shunting movements necessary for running trains in and out of the works.

### Dieselisation on the Eastern Railway of India

THE 1,950-h.p. diesel-electric locomotives on the Indian Eastern Railway were first put to work on the Grand Chord main line, where there is a 14-mile gradient of 1-in-80. They worked 2,300-ton goods trains between Dhanbad or Gomoh and Gaya. As more diesels were delivered they extended their scope from Gaya to Moghalsarai and to Barkakana over the loop line via Sonenagar and Barwadih. Two lengths of this loop, totalling about 58 miles, are being doubled to facilitate the movement of coal from the Bokaro, Karanpura and neighbouring coalfields to Northern India via Moghalsarai. The average monthly mileage worked by these diesels is about 7,500; miles per day per engine-in-use have been about 250. A new diesel depot is being constructed at Patratu about 20 miles north of the important centre, Barkakana, and in the middle of the Karanpura coalfield. The Patratu diesels will also work 3,600-ton trains over the new line now under construction from Garhwa Road to Chunar on the Northern Railway.

### Delay in marketing patents

THE Comptroller-General's annual report on the work of the Patent Office (published on May 11) states that, although the initial delay in obtaining a patent is still too long, the office was not responsible for the three to three-and-a-half years often quoted as the time needed to obtain a patent. If an applicant deals promptly with questions raised by the office, an application can be accepted and published within 18 months; 50 per cent of the applications in fact are accepted within two years. Nevertheless, one applicant in five takes so long that his application is not accepted in less than three years; in 1960, over 2,000 people paid an extra fee to be allowed an extension to three and three-quarter years. The report referred to the continued increase in applications for patents and trade marks and in applications from countries overseas. More than half the complete specifications to be examined came from abroad.

### The Nova Scotian Hotel, C.N.R.

THE Canadian National Railways administration is justly proud of its numerous fine hotels. Typical of them is the Nova Scotian at Halifax, and it is noteworthy that such an excellent hotel is situated so far east. As well as having 327 rooms, it can accommodate nearly 1,600 diners and meetings of over 1,800. The cafeteria is one of the largest in Canada and the ballroom is the biggest in Eastern Canada. The hotel has a unique system of "climate control," and in case of failure of the public electricity supply, the lighting, lifts and water-pumping services can be restored within 7 sec. by the automatic switching in of a high-power a.c. generating set. Every modern electric facility is installed, including an automatic dishwasher capable of washing and drying 10,000 pieces an hour. A special feature of the Nova Scotian is the provision for holding exhibitions and sales there. On the first floor a high and wide door will admit large lorries, motor-boats and cars hoisted from ground level outside by crane.

### New business secured by Eastern Region

THE Eastern Region of British Railways recently secured an exclusive contract for the transport of all exhibition stands and fittings for the British Trade Fair in Moscow, via its Harwich-Rotterdam freight service. The contract was secured because rail containers provided a door-to-door service, reduced handling, and kept packing costs to a minimum. Loaded in containers, the equipment was railed from London, Manchester, and Glasgow to Harwich, where it was transferred to container ships to Rotterdam, where a concentration centre had been established. By the end of March, the containers commenced their journey by special trains to the U.S.S.R. They transferred at Brest to broad-gauge wagons for the final stage of their journey to Moscow. With transshipment at the Russian frontier, there is no reason why there should not be regular freight working between Great Britain and the U.S.S.R. by this route. Although no freight wagons at present permit wheel change to avoid transshipment, these could be provided.

### Traffic congestion and doubling in South Africa

THE rapid increase in industrial and other developments in India is causing serious congestion on many trunk lines. On the Southern Railway the sections most affected are (1) Waltair-Madras—part of the East Coast or north-east main line from Calcutta and northern India to Madras, and southern India—(2) Madras-Arkonam-Jalarpet-Erode sections of the Madras-West Coast trunk route, and (3) Arkonam-Raichur on the Madras-Bombay main line. All these are single-line 5-ft. 6-in. gauge sections except the short one between Madras and Arkonam, which is double. Doubling is therefore being taken in hand between Arkonam and Erode—some 52 miles having already been completed—and between Arkonam and Renigunta, part of (3), now carrying considerably increased traffic as a result of the diversion of north-east-to-west traffic away from Madras by the conversion of Guntur-Renigunta cross line from metre to broad gauge. The doubling of the Waltair-Gudur section is also recognised as necessary, and some lengths are already being re-graded.

### Survey of Colombian transport

THE Colombian Government and the World Bank will jointly sponsor a survey of Colombia's transport facilities and needs with the aim of formulating a co-ordinated transport investment programme. The survey is being undertaken by the New York engineering firm of Parsons, Brinckerhoff, Quade & Douglas, which is sending 13 experts to Colombia. A steering committee will guide and supervise the work. Colombian Railways also has engaged four experts from the New York engineering firm of Coverdale & Colpitts to advise on manage-

ment and investment. Recommendations will cover a co-ordinated investment programme for highways, railways, ports, and airports, and will indicate priorities and preliminary views on costs and benefits.

### Indian Budget Estimates for 1961-62

PRESENTED at the turn of the 2nd/3rd Five-Year Plan periods the Indian Railway Budget for 1961-62 is of unusual significance. Its estimates incorporate adjustments necessitated by the approval of both Upper and Lower Houses of Parliament in December of the recommendations of the Parliamentary Railway Convention Committee, 1960, with regard to the quinquennial period 1961-66, namely:

(1) The rate of dividend on capital payable by railways to general finance to be raised from 4 to 4½ per cent, subject to the following reliefs to railway revenues in addition to those under (4) below. These reliefs include (a) the payment by general revenues of losses incurred in working strategic lines; (b) special relief on the lines of (a) as applied to the North East Frontier Railway; (c) Railways to pay interest at commercial rates on the element of over-capitalisation, now assessed at Rs.121 crores (Rs.1 crore = £750,000). Also dividends on new lines, deferred for five years, would be payable only if the net incomes of those lines left a surplus after payment of the current dividend.

(2) The present scope of the Railway Development Fund is to be retained to cover major labour welfare works and operating improvements costing over Rs.3 lakhs (£22,500) if not directly remunerative. The existing provision is to be retained to finance such expenditure through temporary loans from general revenues if the fund is unable to do so.

(3) To enable the Third Five-Year Plan to begin unencumbered, outstanding liabilities of the Development Fund to general finance, namely Rs.29.40 crores, incurred in such temporary loans, are to be liquidated.

(4) Railway users' amenities' allocations covered by the Development Fund are to continue to be a minimum of Rs.3 crores a year.

(5) The total contribution to the fund from railway revenues during the period 1961-66 is to be Rs.350 crores, with an appropriation of Rs.65 crores in 1961-62 increasing by steps yearly to Rs.75 crores in 1965-66.

(6) Passenger Fares Tax and collections from it payable to general finance for distribution among State Governments are to be merged in passenger fares as from April 1, 1961, but the railways are to pay Rs. 12.5 crores annually to the States.

The revised estimate of traffic receipts during 1960-61 is Rs. 458 crores, Rs.6.5 crores less than the budget figure due mainly to lower goods earnings. The revised estimate of working expenses is Rs. 371.4 crores, and the surplus now expected is Rs.14.03 crores against Rs.18.43 crores forecast in the budget.

In the Budget Estimates for 1961-62, an increase of about 1 per cent is foreshadowed over the 1960-61 revised figure for coaching earnings, and, in expectation of a rise of 15 million tons in goods traffic, the expected goods earnings are placed at 9 per cent higher. In fact, the total traffic receipts are estimated at Rs.499.95 crores or 499.02 after deducting suspense.

Working expenses are expected to total Rs.381.18 crores (Rs.375.61 revised 1960-61 figure) allowing 2 per cent more for fuel than in 1960-61. On the other hand, it is estimated that there will be Rs.48.65 crores due from credits and recoveries, so that the net sum budgeted as working expenses is Rs.332.53 crores. If to this sum Rs.65.00 crores is added for appropriation to the Depreciation Reserve Fund and Rs.0.13 crores payment to worked lines, the sum total of expenses is expected to aggregate Rs.397.66 crores.

Net traffic receipts are therefore estimated at Rs.101.36 crores. For miscellaneous transactions a net sum of Rs.14.88 crores is also allowed, leaving a net railway revenue of Rs.86.48



crores. This will allow Rs.65.34 crores to be paid as dividend to general revenues, as well as the Rs.12.50 crores now due as payment in lieu of tax on passenger fares. A net gain or surplus of Rs.8.64 crores should therefore be available according to the budget, for the now-current financial year ending March 31, 1962.

### British Transport Commission traffic receipts

THE British Transport Commission traffic receipts for the four weeks ended April 23 again show that passenger receipts have increased over the same period last year although the increase is less than that shown for the preceding four-weekly period this year. The four-weekly Merchandise and Livestock result must give cause for some concern as this time there is a decrease of £11,000 compared with last year, the previous four weeks this year showed an increase of £263,000. Minerals traffic receipts too continue to decline as did Coal & Coke receipts. This latter is only to be expected and will no doubt show even further decreases as the spring weather gives way to the summer.

#### TRAFFIC RECEIPTS

	Four weeks to			Incr. or decr.	Aggregate for eight weeks to			Incr. or decr.
	April 23, 1961	April 24, 1960			April 23, 1961	April 24, 1960		
	£000	£000	£000		£000	£000	£000	
Passengers—								
British Railways	12,121	11,513	+ 608		41,705	38,843	+ 2,862	
London Transport—								
Road passenger services	4,437	4,215	+ 222		17,612	16,859	+ 753	
Railways	2,127	1,917	+ 210		8,626	7,795	+ 831	
Provincial & Scottish buses	4,661	4,391	+ 250		17,764	16,715	+ 1,049	
Ships	521	474	+ 47		1,257	1,130	+ 127	
Total passengers	23,867	22,510	+ 1,357		86,964	81,342	+ 5,622	
Freight, Parcels & Mails—								
British Railways—								
Merchandise & livestock	7,599	7,610	— 11		31,840	31,379	+ 461	
Minerals	3,399	3,624	— 225		14,740	15,317	— 577	
Coal & Coke	7,172	7,750	— 578		34,476	36,177	— 1,701	
Parcels, etc., by coaching train	4,227	4,196	+ 31		16,617	16,568	+ 49	
Total freight, British Railways	22,397	23,180	— 783		97,673	99,441	— 1,768	
Others	4,723	4,293	+ 430		19,077	17,198	+ 1,879	
Total freight, parcels & mails	27,120	27,473	— 353		116,750	116,639	+ 121	
Total	50,987	49,983	+ 1,004		203,714	197,981	+ 5,733	

\*Includes receipts from collection and delivery, etc.

†Receipts from railway movements wholly within dock areas, included in previous periods under "Freight, Parcels and Mails," are now classified as miscellaneous.

#### PERCENTAGE VARIATIONS 1961 COMPARED WITH 1960

	Four weeks to		16 weeks to
	April 23, 1961	April 23, 1961	
British Railways:			
Passengers	+ 5.2	+ 7.3	
Parcels	+ 0.7	+ 0.2	
Merchandise & livestock	— 0.1	+ 1.4	
Minerals	— 6.2	— 3.7	
Coal & Coke	— 7.4	— 4.7	
Total	— 0.5	+ 0.7	
Ships (passengers)	+ 9.9	+ 11.2	
British Road Services inland Waterways & Ships (cargo)	+ 10	+ 10.9	
Road Passenger Transport, Provincial & Scottish	+ 6.1	+ 6.2	
London Transport—			
Railways	+ 10.9	+ 10.6	
Road services	+ 5.2	+ 4.4	
Total	+ 7.0	+ 6.4	
Aggregate	+ 2.0	+ 2.3	

### A question of priorities

SOME very interesting facts were made public at Colchester recently, when Mr. W. H. Few, Traffic manager (Liverpool Street) of the Eastern Region of British Railways, spoke at that Region's first open forum. Mr. Few deprecated the neglect of railway equipment until it had become old and ill-

adapted to modern life, and said that railwaymen resented this state of affairs even more than the public. He recalled that during the war the railways were kept moving by a policy of make-do and mend, a policy which had continued after the war. By 1945, the railways had become exhausted after fulfilling a key role for six years and having carried vast quantities of ammunition and vital supplies. They were badly in need of an infusion of new capital. Money was required to buy equipment, to construct buildings, and to renew track, but the railways had to wait. They were made to wait by the very people who were now their most vociferous critics. Under controlled capital expenditure, Parliament had placed the railways seventeenth on a list of priorities giving precedence to the motor car and other exporting industries. It might be that the right policy for the country as a whole had been adopted but it was a bad thing for the railways, which were struggling along on worn-out equipment and seeing available freight traffic going over to road transport operating modern lorries turned out by the newly-equipped factories.

It was not until 1954—nine years after the war—that the railways were given the green light to go ahead. In December of that year, a 15-year plan was published. It was to cost £1,200 million and, when completed, would facilitate vastly improved services using modern techniques. The plan was revised in 1957 to take into account rising prices, and it was then costed at £1,500 million, or £100 million a year, only half of which sum was for improvement. This figure was not considered excessive taking into account the gross annual turnover of the industry, which was £600 million.

Since then much progress had been made, and modernisation and electrification schemes were beginning to save, and indeed to make money. Instances cited were the new marshalling yard at Temple Mills, which had reduced operating costs by £250,000 a year, and the electrification of the Southend line on which, in two years, the number of passenger-journeys had trebled.

The Eastern Region had electrified the Southend line; all the North East London lines as far as Bishops Stortford and Hertford, the main Norwich line as far as Chelmsford, and from Colchester to Clacton and Walton. It was now in the middle of "closing the gap" between Colchester and Chelmsford which should be completed by next Spring or Summer. Altogether 320 miles of single track will have been electrified—320 miles, the distance from Colchester to Penzance—all of it with 25 kV. a.c. or, nearer the heavily built-up areas, with 6,250 V.

There was still a lot to be done, and it had to be done while full passenger and freight services were maintained. The forbearance of the public was sought for a little longer so that the railways could provide them with a service of which they could be justly proud.

### Eastern Region summer services

THE easing of speed restrictions for engineering work is making possible a good deal of acceleration over Eastern Region main lines from June 12 next. The postponement of Peterborough Station reconstruction will cut times between Kings Cross and Leeds, Bradford, York and the North by an average of 9-11 min., restoring in general the 1960 summer times, including a number of mile-a-minute runs. The more substantial acceleration of the 7.30 p.m. Down "Aberdonian," bringing that express into York by 11.1 p.m., 28 min. earlier, was referred to in the April issue; in addition to its long-distance work, this express will provide a useful late evening service to York, Darlington and Newcastle.

Altered starting times in the Down direction are those of the 12.55 a.m. "Tynesider," 7.45 a.m. "West Riding" and 8.5 a.m. "Talisman," all to leave Kings Cross 5 min. later. The non-stop Kings Cross-Edinburgh "Elizabethan" is to run at its usual times, 9.30 a.m. Down and 9.45 a.m. Up, throughout the currency of the timetable, as last year taking



6 hr. 35 min. for the 392.9 miles. The "Master Cutler" Pullman will resume its 2½-hr. schedule in each direction between Kings Cross and Sheffield. In the Up direction the 7.52 a.m. from Leeds is to call additionally at Grantham (9.47/9.50 a.m.) and reach London at 11.47 a.m.

With "Britannia" Pacifics now replacing "B1" 4-6-0s, there will be a fairly substantial speed-up of East Lincolnshire line trains, though mainly south of Peterborough. The 4.10 p.m. from Kings Cross will start 2 min. later but reach Peterborough 12 min. earlier, at 5.38 p.m., and Grimsby at 7.57 p.m., 14 min. earlier. The 6.45 p.m. Down will have an acceleration of 26 min. by starting at 6.50 p.m., running to Peterborough in 80 instead of 97 min., and arriving in Grimsby at 10.23 instead of 10.44 p.m. Southbound, the 6.45 and 8.43 a.m. will start from Grimsby at 6.54 and 8.43 a.m., reach Peterborough at 9.1 and 10.58 (instead of 9.2 and 11.3) and Kings Cross at 10.33 and 12.35 (instead of 10.48 a.m. and 12.55 p.m.), journey times faster by 24 and 20 min. respectively. Certain other services which involve changes at Peterborough also will be quicker; with the 11.32 a.m. (now 11.24) from Grimsby, Kings Cross will be reached 28 min. earlier, at 4.6 p.m., and with the 12.30 p.m. (now 1.10 p.m.) the arrival will be 1 hr. earlier, at 4.56 p.m.

The severance of certain connections at Sheffield between trains from the Cleethorpes and Lincoln directions, and trains to Manchester, which took place when an even-interval electric service was put in operation last autumn, will to some extent be remedied in the summer timetable, particularly by retiming diesel multiple-unit trains to arrive in time to connect with earlier departures from Sheffield. For example, the 11.55 a.m. from Cleethorpes will be accelerated 14 min. to Sheffield, so now connecting with the 2.45 instead of the 3.45 p.m. to Manchester—a gain of 1 hr. on the through journey.

On the Great Eastern Colchester main line, while all expresses will still retain the 10 min. recovery time to compensate for electrification slacks between Chelmsford and Colchester, the further additions to all the midday schedules to allow for stops at Shenfield (in lieu of withdrawn Shenfield-Chelmsford electric trains), and for single line working over this stretch where necessary, will be withdrawn for the summer, with the resultant acceleration by 13 to 15 min. of the trains concerned. The withdrawn Liverpool Street-Clacton trains will also be restored, but this summer the 10.33 and 11.33 a.m., 1.33, 2.33 and 7.39 p.m. Down, with the corresponding Up trains, completing the full hourly interval service, will not begin to operate until July 17.

Except on Saturdays, the 7.30 p.m. from Liverpool Street will omit the Finsingham, Diss and Tivetshall stops and reach Norwich at 10.11 p.m., 18 min. earlier. On Fridays the 6.22 p.m. relief from Liverpool Street to the 6.30 p.m. "East Anglian" will be extended to Lowestoft and Yarmouth, and the 8.35 a.m. Monday relief from Ipswich to the 7.45 a.m. from Norwich similarly will start from Yarmouth at 6.42 a.m. and Lowestoft at 7.8 a.m. In both cases, however, it will be quicker by 24 min. Down and 18 min. Up for passengers to and from Yarmouth to travel via Norwich by the main train rather than the relief.

On the Cambridge main line the 10.36 a.m. from Liverpool Street to Cambridge will be extended to Kings Lynn, and instead of last summer's 11.20 a.m. from Liverpool Street to Hunstanton, non-stop from Cambridge to Kings Lynn, there will be an 11.36 a.m. to Hunstanton, fitting in with the hourly sequence of Cambridge trains and calling, like the 10.36 a.m., at Bishops Stortford, Cambridge, Ely, Littleport and Downham; Hunstanton will be reached at 2.38 p.m. In the Up direction the 2.40 p.m. from Cambridge to Liverpool Street will start from Kings Lynn at 1.33 p.m., and the through Up Hunstanton train will start from there at 7 p.m., providing a 7.37 p.m. departure from Kings Lynn and 8.40 p.m. from Cambridge, and due in Liverpool Street at 9.56 p.m.

The full electric suburban service is printed in the timetable,

but with the warning note that owing to difficulties with the new electric stock it may still be necessary for a short time to continue the cancellation of certain rush-hour trains.

## The problems of freight train traffic

BY A CORRESPONDENT

**NUMBER 3** Transport statistics gives statistics of freight train operation for 12 weeks to March 26. In that period British Railways originated 61,115,000 tons of freight, 371,000 tons fewer than in 1960. This loss of 0.6 per cent in tonnage saved the railways the working of nearly 48 million ton-miles, or 1 per cent of last year's movement, but freight train receipts were £1,003,000, or 1.5 per cent less. Merchandise tonnage was up 301,000 (3.2 per cent), but required the working of 50.7 million extra ton miles (3.7 per cent) and brought in only £472,000 (1.9 per cent) additional revenue, though its average length of haul was 135 miles compared with 74 for minerals and 52 for coal. The old problem whether rates are not being unduly reduced to secure traffic is still with us.

A second problem is how to improve the use of wagons assigned to merchandise traffic so as to cheapen the cost of working. In the 12 weeks to March 26 the railways originated 301,000 more revenue tons of merchandise, a rise of 3.2 per cent but, including free hauled traffic, loaded 4,000 fewer wagons and raised the average wagon-load at starting point nearly a fifth of a ton, or 4.6 per cent, to 4.4 tons. These results were attained in spite of a recession in the London Midland Region which originated 154,000 fewer tons, a fall of 5.7 per cent, forwarded 35,000 fewer wagon-loads, a drop of 4.8 per cent, and reduced the average load to 3.91 tons. As the London Midland originates 29 per cent of total merchandise traffic, measured by tons or wagons, there is no apparent reason why its wagon-load during recent years should not have exceeded the all-line average instead of trailing behind.

During these 12 weeks to March 26, freight train-miles by all modes of traction totalled 29,294,000, a decrease from 1960 of 467,000, or 1.6 per cent, confined almost entirely to the London Midland and Western Regions. The Eastern and Scottish Regions reported small increases, while the North Eastern worked 171,000 more train-miles, a rise of 4 per cent. Over the whole system freight train-hours totalled 3,221,000, a decrease of 99,000, or 3 per cent, spread over all Regions except the North Eastern, where a heavy coal traffic largely accounted for 13,000, or 2.8 per cent, more train-hours as well as a 4 per cent rise in shunting locomotive-hours.

With a sparse occupation of many running lines, a sharp rise in freight train speed should have been possible. Actually, the all-line average speed of freight steam trains rose slightly to 8.96 m.p.h., though the London Midland speed dropped to 8.18, compared with 8.68 on the Eastern, 9.02 on the Western, 9.06 on the North Eastern, and 11.11 in Scotland. For diesel freight trains the all-line speed was 10.58 m.p.h., the regional figures being London Midland 8.53, Western 9.07, Eastern 9.97, North Eastern 17.84 and Scottish 11.11 m.p.h.

The train-load for the whole system averaged 155 tons. Combining the load and speed factors, 1,161 net ton-miles were turned out in a train-hour, about a 2 per cent rise on the 1960 output of freight train operation. The Eastern Region had the highest output of 1,329 ton-miles, 71 more, or 5.7 per cent, over 1960, and 12 per cent above the London Midland figure of 1,183. The North Eastern came close behind with a figure of 1,170, above last year by 2.5 per cent, but the Western had a 1 per cent set-back to 1,075. Scotland advanced its production of ton-miles by nearly 4 per cent to 1,052. Long may the liveliness on the eastern side of England and in Scotland continue.

The conclusion based on all these statistics is that the London Midland Railway is overweighted in the effort to operate a fourth of the running lines of our railways. In

1920, *The Railway Gazette* foresaw that the combination of the North Western and Midland companies, with separate routes to Scotland and different ideas about railway operating, might lead to difficulties. The Editor propounded an alternative scheme, which left the Midland as the nucleus of a separate

region. Time has shown that there was much force in his observations. There is no reason why the present set-up of six regions should be permanent and it is to be hoped that the British Transport Commission, will, when reconstituted, review the present organisation.

## LETTERS TO THE EDITOR

THE EDITOR IS NOT RESPONSIBLE FOR THE OPINIONS OF CORRESPONDENTS

### RAILWAYS INTO ROADS

May 15

SIR, How artless is Benbow's far-from-new suggestion that a convoy of buses is more easily manoeuvrable than an equivalent electric train! One notes the "throughout speeds of about 40 m.p.h.," also that each bus has the seats of a 1920 South Eastern and Chatham third-class coach. But "Benbow's" buses are to be double-deckers. That will make them, if they are to pass existing tunnels, much more inductive of claustrophobia than even the most unpleasant "low-bridge" types on certain country services. Each will have a driver—that makes ten to the equivalent of one train movement—though one supposes conductors will not be necessary because passengers book from existing railway stations.

One supposes also that block working will be unnecessary, as the buses will follow one another at sight (at 40 m.p.h. average). Overtaking will be accomplished, "Benbow" says, with "no difficulty" . . . "with lay-bys at stations." Now, we are all for mechanical progress, most of all in transport, and I for one will be most interested to see full plans of the layout at Liverpool Street and Bishopsgate Goods, and of the approach from Shenfield, as they have doubtless been prepared by the Railway Conversion League, with full diagrams of scheduled vehicle movements round the 24 hours. The "C"-licence holders must be squeezed in somehow. One assumes—"Benbow" skated round this one—that private cars will be excluded, though the conversionists are very keen on driving themselves on former railway formations.

Perhaps we might have further details (not subject to such vague qualifications as "easily overcome" or "with no difficulties") of the scheme as designed to admit private motors also, for one understands that the main point of railway conversion is to avoid the expense of building many thousands of miles of motor roads additional to the existing railways. "Benbow" and his friends must get 1,000 seated passengers past one point, on one line, at 70 m.p.h. at 2-min. intervals, so far found possible in passenger transport only with electric trains and automatic colour-light signals.

Yours faithfully,

C. HAMILTON ELLIS

Southesk, Mannings Heath,  
Horsham, Sussex

### A FIELD FOR BRITISH ENTERPRISE

May 10

SIR, Your editorial article entitled "F.B.I. reports on Spanish market" provides food for thought.

In the minimum of words, the Portuguese market has for some time offered no less an opportunity and a challenge for British manufacturers.

The scope and significance of Portugal's second five-year development plan, initiated in 1959, surely cannot have escaped the notice of our leading industrialists. Modernisation and re-equipment of railways (with electrification playing the major rôle), construction of motorways and airports, erection of the country's first nuclear reactor and steel plant (the first a *fait accompli* and the second already in an advanced stage) are but a few of its features that come to mind.

At present, Portugal has a man-sized problem of another kind to tackle, and the regrettable dissemination of irresponsible propaganda (much of it emanating from those whom she has hitherto regarded as friends) merely serves to aggravate the situation and defer the solution.

However distasteful their respective régimes may be to some of our "progressives," the fact remains that Spain and Portugal have between them succeeded in maintaining and strengthening an Iberian bulwark against something which would be not only distasteful but disastrous.

Spain's value in this context is apparently fully appreciated, but is there any cogent reason why Portugal should be left out in the cold?

It is still not too late for the authorities concerned to create an atmosphere in which mutually beneficial partnerships between London and Lisbon would, apart from transient commercial advantages, reap dividends of a more lasting nature.

Yours faithfully,

J. E. L. SKELTON

Rua Afonso Sanches Lote "C"—2<sup>o</sup>E.,  
Cascais, Portugal

### RAIL TRANSPORT TO LONDON AIRPORT

May 15

SIR, There is no question of London Transport seeking excuses for not building an extension of the Underground from Hounslow West to London Airport as suggested by Mr. J. Morley in your May 5 issue; London Transport's letter, on which he comments, was concerned only with stating the facts which would have to be taken into account in such a scheme. None of the points he raises would have any material effect on the scheme's financial prospects. All sources of passenger revenue, including the effects of the growth of air traffic and the results of transfer from buses, have been taken into account by London Transport in estimating the probable traffic. The cost of station improvements at Gloucester Road, which Mr. Morley assumes would not be necessary if the extension were made, would in any case represent less than 10 per cent of the cost of the main scheme. Against any saving of operating costs on airport coaches—which are specially designed vehicles, unsuitable for ordinary passenger services—would have to be set the loss of revenue from these coaches.

The considerable transfer of traffic to the rail extension from local bus services would in fact involve financial loss on the road services side, because it would be spread over a number of routes and it would be impracticable to reduce these in proportion to the reduction of passengers.

The extension would provide a special service to the airport, of which the total estimated revenue, at standard fares, would clearly not cover the combined operating and capital costs. If the scheme were to be undertaken, London Transport, which is required to pay its way, considers that this situation would need to be met by special charging and financial arrangements of the kind outlined in its previous letter.

Yours faithfully,

C. A. LYON  
Press Officer

London Transport Executive,  
55 Broadway, London, S.W.1

## The Scrap Heap

### Sit-down strike ?

The Underground train doors closed behind a City of London police dog on May 16, leaving his handler on Loughton Station. The dog sat down and refused to move. At Liverpool Street another dog handler was waiting. He gave the "password" and the dog went quietly.

### Over the bend

A photograph taken by Queen Alexandra, which included a railway bridge over which a train was passing in the Sandringham district, showed a slight bend in the bridge. The structure was examined by an expert, who found it faulty, and rebuilding was commenced.—From *"The Evening News"* of May, 1911.

### Direction of travel

The railwaymen of Britain can tell you how to get to most places. The Rt. Rev. G. W. Clarkson, newly-appointed Dean of Guildford Cathedral—who was a railway clerk until joining the Grenadier Guards as a private in 1915 at the age of 17—can tell you how to go on a very long journey indeed.

### Out-of-gauge load

At Tilbury, Rezi, the Indian elephant, created quite a problem when she sailed in on May 16. All 5½ tons of her arrived in a 10-ft. wide wooden cage in the hold of the Soviet cargo ship *Gauya*. The cage was too wide to go on railway trucks for the journey to Wembley, and after a hurried consultation between shipping and circus officials a lorry was sent to take the elephant by road. And the floating crane Titan was used to lift the cage on to the quayside.

### Exit the "Honeymoon Express"

The company operating the railway between Buffalo and Niagara Falls is said to have been losing about £50,000 a year in maintaining a service of four trips daily. It was commonly called the "Honeymoon Express" as it had carried many thousands of newly-wed couples to the Niagara Falls. The railway has now ceased to operate. For its last journey, the "Honeymoon Express" was festooned with streamers and carried a full load of "sentimental" passengers.

### Spotters

Thousands of schoolboy train spotters know things about War Department locomotives which are supposed to be kept secret, it was claimed on May 14. Mr. Stanley Mayne, General Secretary of the Institution of Professional Civil Servants, said that particulars of WD locomotives,



*Corris Railway coach, above as summer-house, and below after reconditioning*

which any WD officer was supposed to keep very much to himself, were observed and recorded by small boys in the train spotter clubs, which also included adult enthusiasts.

### Transplanted

After doing duty as a summer-house in a private garden for 30 years, a coach from the Corris Railway has been restored and is now in service on the Talyllyn Railway. Members of the Talyllyn Railway Preservation Society, headed by Mr. D. Gardiner, of Coventry,

have been responsible during the last two years for reconditioning the coach, an operation which involved the provision of a new steel underframe and bogies, and considerable renewal of the bodywork. The work was carried out at the railway workshops at Towyn, during holiday periods and at week-ends. The first trial run of the completed coach took place at Easter, and it was ready for the summer service which commenced at Whitsun. The coach has been finished in the colours in which it ran at the end of the last century.



# OVERSEAS RAILWAY AFFAIRS

FROM OUR CORRESPONDENTS

## INDIA

### Three-tier sleeping cars

Some 131 broad-gauge and 73 metre-gauge three-tier sleeping cars have been constructed in the period from April, 1960, to January-February, 1961. The broad-gauge vehicles were built in the Integral Coach Factory, Perambur and the metre-gauge coaches in the Southern and Western Railway workshops.

### The potentialities of Sealdah, Calcutta

The Calcutta suburban traffic on the Eastern Railway is shared between two Divisions, the Howrah and Sealdah Divisions, the former on the right or west bank of the River Hughli, and the latter on the left. With the introduction of electric multiple-unit trains on some of the Howrah Division lines there are already 126 suburban passenger electric trains—as compared with 66 steam trains previously—carrying 175,000 passengers daily. Nevertheless, the Sealdah Division still carries 64 per cent of the Eastern Railway suburban traffic with steam traction. It also is being electrified, and Sealdah Station and yard are being remodelled at a cost of some £667,500. This work includes re-signalling with electric automatic route-relay working and interlocking.

### Another line to feed Sealdah

In place of the former narrow-gauge line, a new 5-ft. 6-in. gauge branch, 33 miles in length, is being constructed from

Baraset to Hasnabad at a cost of £19,200,000. Passing through the outer-suburban area of Calcutta, it will bring additional traffic into Sealdah from the Sunderbans delta. The formation and bridgework are reported to be nearly complete, and rail-laying is in hand. This line is expected to be opened by the end of the year.

### Gauge conversion in Bihar

Another new Eastern Railway line now under construction is to connect Bukhtiarpur, on the main line between Asansol and Patna, with the city of Rajgir, and the University of Nalanda. This 33-mile construction is estimated to cost about £16,500,000 and is to be opened by the end of this year. It will provide a much-needed link with Patna, the State capital, and replaces another narrow-gauge branch.

### Bina-Bhopal section doubling

The doubling of 39 miles of the congested 86-mile Bina-Bhopal section of the Central Railway Bombay-Delhi main line was recently completed, and the second line was opened to traffic. Mr. D. R. Khanna, General Manager, Central Railway, stated that the estimated cost of the work was £2,600,000. Thirteen major and 50 minor bridges, and 31 signalboxes had to be built and the entire section had to be remodelled for double-line operation. On it two streams of traffic converge, grains and pulses from North India intended for South India,

and coal traffic from Bengal, Behar and the Central Indian Collieries for the industrial areas of Gujarat and Saurashtra.

## RUMANIA

### Goods exchange agreement

Railway goods wagons are among the commodities that Rumania will export this year to Hungary under a goods exchange agreement, the first under a five-year pact signed between both countries last year.

## ITALY

### Higher rail charges ?

The Italian State Railways is believed to be studying measures which would provide for increases of 15 per cent on present passenger fares, 10 per cent for goods, and 20 per cent for parcel carriage rates.

## DENMARK

### More suburban lines in Copenhagen

The Danish Government has agreed to more suburban lines in Copenhagen in view of the need to take the steady growing traffic to and from town. The line to Taastrup is close to completion. There will be a new line from Copenhagen, south along the shore halfway to Koege city (the so-called Koege-Bugt-Line), and another new line north from Jaegersborg. The existing line to Hareskov stops far from the centre of Copenhagen, and travellers have to change to street-cars. This line will now come to the centre (probably Copenhagen Central Station) over an already existing goods-line from Norrebro to Oesterport.

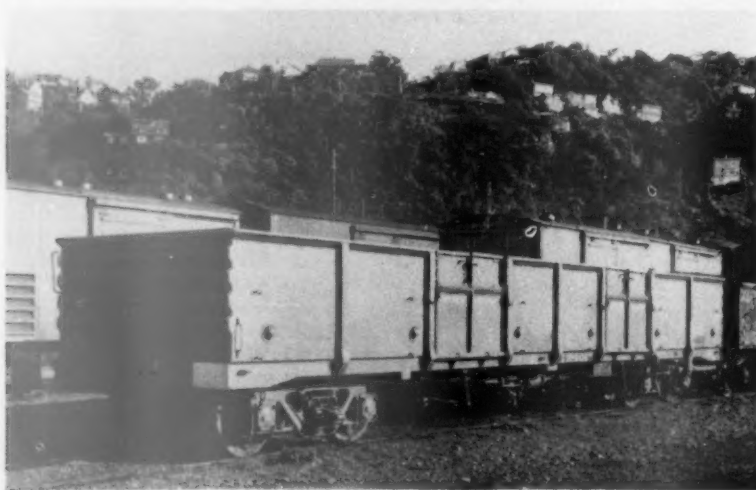
## NEW ZEALAND

### New N.Z.G.R. wagon

The illustration shows the new New Zealand Government Railways "Rb" class roller-bearing bogie, steel highside wagon with corrugated ends for express goods traffic. It has a distributed load capacity of 30 tons.

### New £10 million line proposed

The New Zealand Government has decided to construct a rail link between the port of Nelson and the South Island



New Zealand Government Railways new "Rb" class highside wagon



main line from Christchurch to Picton. The line will probably form a junction with the East Coast Christchurch-Picton line at or near Blenheim, about 40 miles east of Nelson. It must negotiate a succession of high ridges and therefore is likely to be very much longer and to entail considerable tunnelling; its estimated cost is £10 million. The Wellington-Picton ferry is to be reconstructed as a modern rail and road ferry, enabling rolling stock to be moved across to meet seasonal demands.

## NEW SOUTH WALES

### Wages increase dispute

In response to the Australian railway unions' demand for an increase of £A.2 a week in general pay, the Commissioner of Railways has offered the unions rises up to 15s. a week for 7,000 tradesmen and 5,000 others, mostly Mechanical Branch staff. The offer was subject to a rapid acceptance by the unions, and would be withdrawn if more direct action occurred.

The offer involves an expenditure of an extra £A.450,000 a year, whereas a general rise of £A.2 a week would require an additional £A.5,500,000 necessitating a steep rise in fares and freight charges.

## AUSTRALIA

### Air-conditioned travel

The first air-conditioned train to run on the Central Australian Railway to Alice Springs was scheduled to leave Port Augusta in South Australia on April 24. Built in Australia, it has first- and second-class lounges and a dining car; sleeping accommodation is provided in two- and four-berth compartments. At first the service will run twice a week in each direction and reduce the time taken by several hours.

### Commonwealth Railways results

The Commonwealth Railways Commissioner recently announced that during the current financial year a record profit of £A.1½ million was expected. This

was because there had been a substantial increase in both goods and passenger traffic. An important factor was the growth of the piggy-back traffic to Western Australia. Receipts from this traffic four years ago were only £A.30,000 whereas this year they were £A.750,000, and during the past year they had increased by 40 per cent. This piggy-back service has replaced an irregular coastal shipping service. The 1,200-mile journey between Port Augusta and Kalgoorlie now takes only 36 hr. by rail as against about a fortnight by road lorry.

## EAST AFRICA

### Cheaper second-class travel

Second class coaches with three-tier berths will be put in service on through trains in Kenya and Uganda and the second class fare on these services will be reduced from 16 to 12 cents a mile. The same practice will be introduced on the Tanganyika Central Line before the end of this year.

## PUBLICATIONS RECEIVED

*Air Pumps Compressor pamphlet.* Air Pumps Limited has published a pamphlet describing its range of Mark III air-flow-cooled two-stage electric-driven stationary reciprocating air compressors for pressures up to 150 p.s.i.g. The pamphlet is available on application to Air Pumps Limited, Raynes Park, London, S.W.20.

*Vapour pressure thermometers.* An eight-page publication, which describes the vapour pressure thermometers manufactured by the Cambridge Instrument Co. Ltd., contains details of standard instruments and information on a wide variety of modifications and accessories. Copies can be obtained from the Cambridge Instrument Co. Ltd., 13 Grosvenor Place, London, S.W.1.

*Units of Weights and Measures (United States Customary and Metric)—Definitions and Tables of Equivalents.* National Bureau of Standards Miscellaneous Publication 233 (supersedes Miscellaneous Publication 214), issued December 20, 1960, 20 pp., 40 c. An agreement among the Directors of National Standards Laboratories of English-speaking nations to obtain uniformity in precise measurements involving the yard and the pound, have brought about refinements in the definition of the U.S. customary units of length and mass, and have made a revised edition of this publication desirable. The units of length, area, volume, capacity, and mass in the United States are defined in conformity with the agreement and tables of interrelation and of equivalents for these units in the metric

system, and in the U.S. customary system have been recalculated by automatic computer. Further revisions include the deletion of the table showing interrelation between bushels and hectolitres, and the addition of a more complete table showing equivalents of inches in millimetres. Copies can be obtained from Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Foreign remittances must be in U.S. exchange and should include an additional one-fourth of the publication price to cover postage.

*How to See London.* A 45-page booklet on how to see London, issued by Thos. Cook & Son Ltd., which appears to be principally for the foreign tourist, contains a wealth of information of interest to the British holiday-maker. As well as places of interest to visit in London there are described ways of seeing the Thames valley, the palaces of Windsor and Hampton Court, Oxford, Cambridge, and the Shakespeare country. Some details of motor coach tours at home and abroad are also included.

*Royce Hump-Back Conveyor Furnaces.* A description and specification of conveyor furnaces are contained in a leaflet issued by Royce Electric Furnaces Limited, Albert Drive, Sheerwater, Woking, Surrey. The hump-back design is suitable for bright heat-treatment processes and brazing, particularly of special alloy steels where a protective atmosphere of hydrogen or cracked ammonia is used and has to be maintained in a high state of purity. The furnaces are avail-

able for two ranges of temperature. The W type, with heating elements of nickel-chromium wire, is designed for temperatures up to 1,000 deg. C., and the T type, with nickel-chromium tape elements, for temperatures up to 1,150 deg. C. The latter design is suitable for copper brazing steel and other high temperature applications. Automatic temperature control is provided.

*Recirculating Ball Nut and Screw.* This brochure, issued by Precision Gear Machines & Tools Limited, Red Ring Works, Bodmin Road, Wyken, Coventry, describes and illustrates Red Ring recirculating ball nut and screw assemblies. These mechanisms are designed to convert rotary motion to linear motion, or vice versa, and are applicable to machine tools, railway jacks, road vehicle steering gear. A specification and details of dimensions for various applications are included.

*Sliding Head Automatic.* A well-illustrated brochure issued by Dowding & Doll Limited, 346 Kensington High Street, London, W.14, describes the British Dowding single-spindle sliding-head automatic machine. Designed to support the work close up to the cutting area, the machine is capable of rapid and accurate production of long, slender workpieces. Examples of the type of work that can be done on the machine are given, as well as particulars of typical production times. The machine is available for bar capacities of 16 m.m. and 10 m.m. respectively, and a specification for each size is included.



General view of exterior

## RE-SIGNALLING AT BARKING, Eastern Region, British Railways

THE impending electrification of the London, Tilbury & Southend section of the Eastern Region of British Railways, together with the rearrangement of the layout, is being accompanied by the re-signalling of the line from just outside Fenchurch Street to Southend and Shoeburyness, including the loop *via* Tilbury. In particular, there have been fundamental changes at Barking, where the

Interlocking area effectively controls traffic from London almost to Upminster—a distance of about 11 miles

former complex junctions on the level have been replaced by a series of flyovers.

The London Transport signalling at Barking was described in *The Railway Gazette* of March 31 last. In the case of the Eastern Region re-signalling, the interlocking area controlled from the new signalbox extends from the London side of East Ham Station to the country side of Barking on both the Southend and Tilbury lines. The Barking signalman also has surveillance over the automatic-signal territory on each side, so that in effect he controls traffic from the London side of Bromley Station almost to Upminster, or a distance of about 11 miles.

### New marshalling yard

On the Tilbury line from Barking, just beyond the Rippleside level crossing, now equipped with hydraulically-operated gates of the conventional type, there is the new Ripple Lane marshalling yard, with its own signalling. Between East Ham and Barking there are new carriage sheds and sidings, situated between the Up and Down Fenchurch Street line. Access to and from these sheds and

sidings is controlled from Barking signalbox, but for reasons of space the East Ham section of the territory is omitted from the diagram. At East Ham the points and signals are operated through a satellite relay room adjacent to the station. Direct-wire control is used between Barking Signalbox and this room.

### Rearrangement problems

In rearranging the layout, two main problems had to be faced. The first arose from the extensive freight traffic between the St. Pancras and Tilbury lines. This traffic crosses both the London Transport lines to Upminster and the Fenchurch Street-Southend lines. The second was the need to provide interchange facilities at Barking between the London Transport and Southend lines.

The diagram shows the flyovers and underpass by which both problems have been solved. It includes the London Transport lines, but omits their signalling. On the Eastern Region side, the new signalling installation at Barking is of the route-setting, "entrance-exit" pattern. From Gas Factory Junction outside Fenchurch Street to the begin-



BK. 58 signal at Barking East



*Control panel in the new Signalbox: the temporary block instruments for stage work have now been removed*

ning of the Barking territory, automatic colour-light signals have been installed. Access to such sidings as remain is controlled from local ground-frames, released by the occupation of the relevant track circuits. As described on March 31, the London Transport and Eastern Region lines have been separated, and one result is the abolition of many former connections.

Beyond Barking, automatic colour-light signalling has been installed, with signalboxes where required.

At Barking itself, some of the Eastern Region lines are signalled for both-ways working. Thus, there is the line off the St. Pancras lines, which runs into platform No. 1. This is used by diesel passenger trains running between Barking and Kentish Town. Again, trains from Southend terminating at Barking run in and out of Platform No. 4. Finally, the connecting road from Platform 8 to the Up Fenchurch Street line is signalled for both-ways working, to give an alternative route when electrification work is in progress under the St. Pancras flyover.

#### Searchlight-type signals

All Eastern Region running signals at Barking are of the searchlight type and give red, yellow, or green through a single lens. A second light provides double-yellow aspect. For diverging lines, junction indicators are used for all running signals. When a junction indicator is illuminated, a train gets a delayed aspect, in that the train has to occupy the berth track-circuit before the signal will clear. In the case of Up terminating Southend trains proceeding "wrong road" into Platform 4, a time-

release also has to operate after the occupation of the berth track-circuit before Signal 3 will clear.

Miniature yellow signals, on the same post as the main signals, are used for facing movements into goods loops, and so on. Here again, the berth track-circuit must be occupied before they will clear. Ground shunting signals are of the standard position-light type, showing a white and red light set horizontally, when "on," and two white lights at an angle of 45 deg. when "off." Where route indications are needed, they are of the stencil type. The points are operated electrically, the point machines being the A.E.I./G.R.S., "split-field" pattern. To operate these, current is provided from a battery in a room

beneath the signalbox, at 110 V. d.c. Exceptionally, the trailing points, where the Up goods loop and Up Tilbury line converge at the London end of Platform 8, are spring points. Normally, they lie set for the Goods Loop and so provide protection in the case of a break-away from a train proceeding up the gradient to the St. Pancras fly-over.

The signalbox is situated on the North side of Barking Station. One building houses both the London Transport and Eastern Region installations, but these are in different rooms and are entirely separate. On the Eastern Region side, the operating room contains a sloping console with an overall length of 14 ft. and a width of 1 ft. 10 in. The signalmen sit facing the traffic.

#### Signal-post telephones

On its extreme left there are the indicators and keys for the signal-post telephones. These are in three groups, one for Down main lines, another for Up main lines, and a third for the Down St. Pancras, Up Tilbury, and Platform 1 bay lines. The circuits are so arranged that only one driver at a signal in a particular group can telephone at the same time.

The rest of the console has a length of 10 ft. 2 in. On it is the illuminated diagram with all necessary indications and controls. The "entrance-exit" or "NX" route-setting system is used.

Opposite each signal there is an "entrance" switch—red for running signals and yellow for subsidiary signals. In its centre there is a white lamp which lights up if the signal lamp filament fails; a buzzer also sounds. To set up a route, the relevant switch is first turned through an angle of 90 deg.—red switches upward and yellow switches downward. To complete the setting-up, the signalman depresses the "exit" button, which is on the diagram immediately in rear of the next signal on the



*Frequency converter sets supplied from grid*





*Relay room, showing accessibility of apparatus*

desired route. He holds that button down until a white light appears on the diagram immediately in rear of the button. This shows that the route is being set up. It remains alight until the signalman resets the route by turning the entrance switch back to the normal position. Provided that the points concerned are free, a signalman is able to reset a route before a previous train has cleared the overlap track-circuit ahead of the next signal. The signal will then clear so soon as the previous train has passed the overlap.

#### **Restricted overlaps**

In the station platforms at Barking restricted overlaps have been provided in some cases as supplements to the full overlap. As soon as a train clears the restricted overlap, a delayed yellow aspect can be given to a following train, as soon as it occupies the berth track-circuit in rear of the signal concerned. The object is to keep traffic moving under close headway conditions. The full overlap has to be clear for the signal to go to yellow without the earlier occupation of its berth track-circuit.

Each signal has its own repeater light opposite it on the diagram. This shows red when the signal is "on," and green for all "off" aspects; yellow, double-yellow or green. When a signal gives a delayed aspect, the repeater light remains at red until the signal itself clears.

The positions of the points are indicated by miniature "tongues" on the diagram which move over from normal to reverse as the points themselves move.

Track-circuit occupations are shown by oblong magenta lights in the relevant tracks on the diagram.

Along the far side of the console there are first of all the individual point switches. Normally these lie in the central position, but each switch can be turned to either normal or reverse to operate the points which it controls. In the centre of each switch there is a

"non-correspondence" light. This flashes red while the points are moving, and continues to flash until the points are bolted and detected in the position corresponding either to the route set up on the main diagram or to the individual point switch itself. Immediately below each point switch there is the lock indication light for those points. When that shows white, the signalman knows that the points are locked. This is because either a route has been set up and the governing signal cleared; or a train is actually passing over that section of line; or if the signal has been restored to danger in face of the train, the approach-locking is operating and the time-release (usually 2 min.) has not had time to take effect.

Other switches along this far side of the console include emergency detonator switches, and crank-handle release switches. The more important points have their own individual crank handles, each of which is released by one of these switches. For other points there are two "master" crank handles, kept in a sealed cabinet in the signalbox.

#### **Automatic running signals**

Most running signals are grouped together to work automatically as soon as all of them have been put to the "off" position. These groups are 18, 20, 22; 26, 28, 30, 34; 3, 5, 7, 9, 11; 23, 25; 42, 48, 54, and 45, 47, 51, 55. Each of these groups has its own indicator light on the far side of the console. It glows white so long as all the signals in its group are working automatically, but when the signalman restores the switch of any one signal to normal, automatic working for the group is terminated. The signalman has only to put that signal back to the "off" position to restore automatic working for the group. This facility saves the signalman a lot of work, for if there is a succession of trains along a particular route, he does not have to replace and take off again

every switch in that group, as the train passes each signal.

Ground-frame release switches are on the diagram itself, opposite the location of each ground-frame. A white indicator light shows when the shunter wants the ground-frame and again when he has finished with it, and has restored the points to normal.

There are also indicator lights on the diagram connected with the carriage sheds and sidings. These show first when the shunter has given a release so as to take a train in, and second when he wishes to send a train out.

#### **Method of track-circuit indication**

The track-circuits associated with the automatic signals in the territory on each side of Barking are indicated on separate miniature track diagrams at each end of the console. By the use of a new method it is possible to transmit a considerable number of indications on a single pair of wires. Each track-circuit has associated with its track relay a transmitter generating a voice-frequency current. Each track-circuit has its own frequency, which is maintained at its precise value by a vibrating reed. At the signalbox end the frequencies are separated by a further set of tuned reeds, eventually being amplified and operating relays which in turn produce the indications on the diagrams.

The far side of the panel has two dimming switches—one for the panel itself, and the other for the position-light ground signals on the track. On the extreme right there are the emergency bell keys to adjacent signalboxes.

The train describers, when installed, will be on a vertical panel, above and at the back of the console. They will consist of a simplified replica of the main diagram, with an indication at each signal. This last will be a 2-in. cathode-ray tube, which will show the four figures now comprising the standard Eastern Region train description. Pushbuttons are provided for use when the signalman wishes to interpose a train. Otherwise, the descriptions automatically move forward from signal to signal as the train proceeds.

On the left of the describer panel is the telephone switchboard. This is connected to the signalbox omnibus circuits on each side, to the station staff, to ground-frames and other locations, and to control.

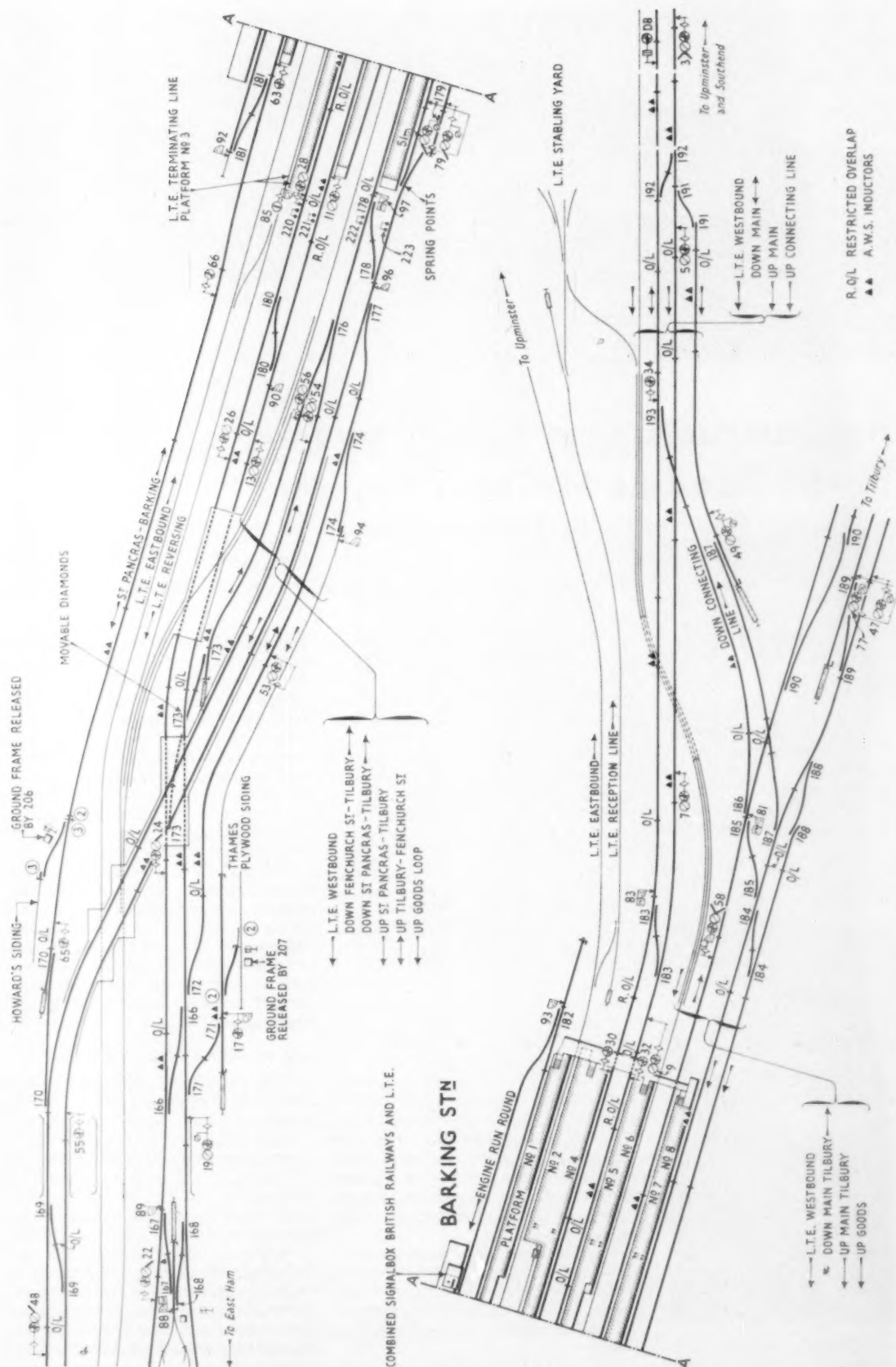
The relay room is on the ground floor, underneath the operating room. In due course it will also accommodate the train describer equipment.

The relays are installed on three long sets of racks. Full-sized relays are used for track-circuits and for signal indications, and miniature relays for interlocking controls and all internal work. All relays are of the plug-in type.

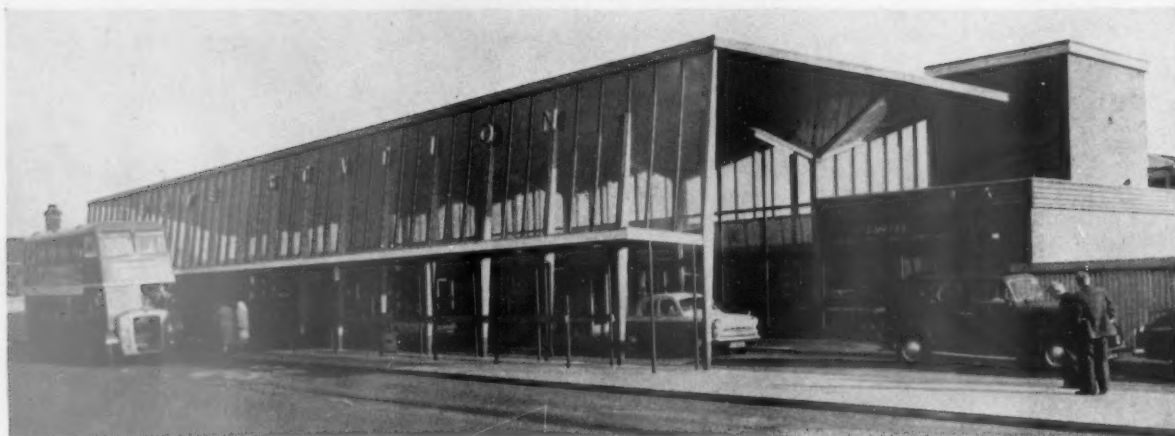
In both the signal and points relay

*Continued on page 595*





*plan of Barking Station, showing platforms and track connections rearranged to provide improved interchange facilities between British Railways and London Transport lines. Also illustrated are the signalling installation, including overlaps, and automatic warning system indicators*



*Unique roof and covered forecourt of new buildings*

## Reconstruction at Crewe Station in the London Midland Region

IN AN extensive modernisation programme at Crewe, the station entrance, booking hall, and offices have been rebuilt. These changes have been necessitated by the rebuilding and raising of the Nantwich Road Bridge which spans the stations, to provide sufficient clearance for the high-voltage a.c. electric supply cables.

This reconstruction also involved the demolition of certain platform buildings. These have been replaced in brick and timber to provide accommodation for the stationmaster, train announcer, and other staff, and completely rebuilt toilet accommodation on Nos. 3 and 4 platforms.

The new frontage provides a covered approach road, with bus shelters extend-

### Unique lightweight construction methods used for station buildings carried on road bridge

ing for nearly the whole length of the bridge. There is also a service road for private motor-cars to set down and pick up passengers under cover, and accommodation for taxis. A car park has been constructed adjacent to the station.

From the booking hall of the high-level building a new footbridge extends to serve all platforms, with covered staircases leading down to platform level.

#### Lightweight roof construction

To meet loading requirements on the bridge structure, the weight of the roof of the booking hall and covered forecourt is carried on a single row of pillars positioned along the outer wall of the booking hall.

Along the front and rear edges of the roof are a row of lightly loaded struts serving as anchors for the complete structure. The frame is also anchored at the rear to two of the lift towers.

The roof is of a unique lightweight construction in Columbian pine and is an assembly of eight funnel-shape hyperbolic paraboloid sections. These are made up of two layers of timber planks laid crosswise and glued to the edge and valley beams. Felt covering is used on the outside and natural timber finish on the inside.

Water drainage from each section is through the central hollow supporting pillars. For wind protection, the front of the portion extending over the approach road is glazed down to the roof of the bus shelter.

The spacious booking hall, with excel-

lent natural and artificial lighting, presents a clean and attractive appearance. In the fully-glazed front the entrance doors are set in vestibules which blend with the style and line of the telephone kiosk. Seating is provided in the recess between the vestibules. At one end of the hall is a chocolate and tobacco kiosk and the enquiry office, and at the other end is a bookstall. Anodised aluminium is used for all glazing frames and the floor is covered in terrazzo tiles.

The design and layout of the mechanised ticket office, with a full-length clear-glass front, is typical of the pattern now being adopted throughout the London Midland Region. All tickets are printed on blank cards as required; and equipment and furniture is attractively arranged for good publicity and efficient working conditions.

#### Ticket office equipment

The equipment includes two A.E.G. Multiprinter major and two Flexiprinter machines. Each Multiprinter, with an overall length of 6 ft., is capable of printing and issuing 1,260 different kinds of tickets. In addition to printing and dating, the machine records details of each issue in units of one penny for accounting purposes, thus reducing considerably the clerical work. Blank cards in a range of colours, according to the type of ticket required, are stored in a Bellmatic console rack. Ticket stock control is not required as these are not debitable until ejected from the machine as a printed ticket.



*Booking and entrance hall, showing telephone kiosks and covered forecourt*



*Mechanised ticket-printing and accounting equipment*

The Flexiprinters are used for the rapid printing of identical tickets. The operator inserts a matrix into the machine and, as long as this is held in the "turned" position, tickets are produced at a rate of 200 per min.

Roneo steel office equipment is fitted. Each of the five ticket-issue stations is provided with a Hercules speaking window in which the sound is transmitted by a vibrating plastic film. At one end of the office is a staff mess-room and toilet and at the other is a counter for dealing with privilege tickets, pension payments, and other railway staff business.

#### **Office décor**

The office ceiling is lined in Parana pine and all doors and timber furnishing is in Afrormosia (African teak). The floor surface is polished wood block. White Formica is used to line the roof light openings and artificial lighting is by fluorescent tubes mounted in translucent honeycomb diffusers. Electric Thermivent heaters are fitted and ventilation is by Vent-axia extractor fans.

The covered footbridge to the platforms, with ticket barriers at one end, extends along the rear of the booking



*Uniform daylight and artificial lighting panels give illumination on footbridge*

office. Three goods lifts are provided, one adjacent to the barrier. Glazed blue-grey tiling is used for the walls and the roof is in Parana pine planking. Excellent natural and artificial lighting is pro-

vided by a series of matching roof and fluorescent light units. Along the walls are a row of advertisement panels.

At platform level, the main reconstruction work has been the rebuilding of the stationmaster's office and adjacent buildings. The administrative block is now in the form of a mezzanine floor and the ground floor below this is used for passenger toilet accommodation and to provide a wide thoroughfare between platforms 3 and 4.

In the station announcer's room these windows are double-glazed for sound-proofing. To improve platform visibility for the announcer, a portion of the wall running through the centre of Crewe Station has been removed. This structure is concrete framed with concrete floors and roof.

The floor is covered in "Alufloor" panels which are of composite timber and aluminium construction.

The buildings were designed by Mr. W. R. Headley, Regional Architect, under

the direction of Mr. A. N. Butland, Chief Civil Engineer, London Midland Region, and were constructed by Mr. G. E. Procter, Senior Resident Engineer (Construction).

#### **Re-signalling at Barking**

*Concluded from page 592*

racks, so far as possible, all the relays for each signal or set of points are arranged vertically.

For every a.c. relay, the local feed is "screened" and the "control feed" unscreened. Both receive current at 83½ cycles, and there is a 90-deg. phase difference between the screened and the unscreened currents.

Power is taken from the "grid," with two independent sources of supply. It comes in at 415-V. 50-cycles. There are two frequency convertor sets, each with its motor, and two alternators. One convertor set is normally in use, with the other acting as a standby. These convertor sets are fed at 415 V., 50-cycles, and produce power at 650 V., 83½ cycles.

Signal cables are 1/0-044 24-, 34-, or 45-core as needed. Point operating cables are 7/0-29. All cables are enclosed

in P.C.P. sheaths.

The work was planned and specifications prepared under the direction of Mr. R. A. Green, Chief Signal & Telecommunications Engineer, Eastern Region. The principal contractors were as follow:—

Power Signalling, etc.	A.E.I./G.R.S. Limited.
Train describers, signal-post telephones, etc.	Standard Telephones & Cables Limited
Signalling cables	British Insulated Callender's Cables Limited
Frequency converters	Brush Electrical Engineering Co. Ltd.





*North front and entrance of six-storey building*

## McFADZEAN LABORATORY OF B.I.C.C. GROUP

THE McFadzean Laboratory at Wood Lane, London, W.12, named after the Chairman of British Insulated Callender's Cables Limited, is the latest addition to the Group's research facilities. Fully to explain its purpose, it is necessary to outline the way in which B.I.C.C. technical strength, as a whole, is organised.

### Organisation

The scientific and engineering forces may be considered as being subdivided into two main groupings—engineering and research. The engineering group has laboratories located in every production unit and the primary responsibilities of these laboratories are to exercise quality control in its broadest sense, to improve existing products, whether it be in the materials or the plant and processes which are used, to develop new products to the stage of final production, and to maintain the necessary technical contacts with customers and others.

The Research Organisation, which is concentrated in the Wood Lane laboratories, is responsible for carrying out such long-range experimental work as is necessary to feed to the engineering laboratories the information which they

need to fulfil their shorter-range objectives, and to conduct basic research in fields of lasting interest, regardless of immediate applicability. In addition, the Research Organisation provides central facilities in those cases where they are required by several factories but which demand such specialised personnel or equipment that a number of separate laboratories would be uneconomic or inefficient. The Organisation has 10 experimental departments, each working in a well-defined field of science or technology, and four of these are housed in the new building; the others are in other buildings on the site. All these departments are supported by a works engineering group with comprehensive workshops and machine shops.

The McFadzean Laboratory is a six-storey building providing 64,000 sq. ft. of floor space and accommodates the Instrumentation & Control Department, the Physics Department, British Dielectric Research Limited (a Group subsidiary for research on capacitors), the Diffraction & Microscopy Department and, in

### New laboratory at Wood Lane for long-range experimental work and basic research

addition, the Electronic Computer which is an important part of the facilities of the Mathematics Department, the main offices of which are elsewhere. Also, the Laboratory contains the Drawing Office, the Photographic Section, the main Conference Room, a Lecture Room, some administration offices and catering and social facilities.

### Ambient conditions

These departments were selected as those which most need the atmospheric conditions provided by the complete air-conditioning of the new building but which do not need extensive provision for chemical research (which is carried out in other buildings). However, to permit limited chemical or physico-chemical work, the East wing of the building is equipped with chemical drainage and fumes extraction.

The Laboratory has a basement which, besides having accommodation for the storage of records, the electrical sub-



station, refrigeration and space-heating plant, and the automatic telephone equipment, provides a large space to be used for life-testing and similar long-term tests which need only occasional supervision.

#### Ground floor

The ground floor contains the entrance vestibule and the Conference Room but is otherwise wholly occupied by the Instrumentation & Control Department. This department is one of those which provide a centralised service to the Group and is responsible for:

- (a) developing novel measuring devices, mainly for use in the factories in non-destructive quality control testing;
- (b) designing and constructing complete schemes of instrumentation, using either specially developed or conventional equipment;
- (c) devising automatic production equipment to replace and improve upon existing manual control methods, to improve product quality or to economise in material usage.

The Physics Department occupies the whole of the first floor and nearly all of its work is of a long-range nature and largely concerned with the dielectrics used for power cables of all descriptions. The most important topic, and one in which studies have been in progress for very many years, is research into the properties of dielectrics for very high voltage cables and the department is very well equipped for this purpose.

#### Dielectric research

The second floor is devoted to research on capacitor dielectrics, in the hands of British Dielectric Research Limited, which serves both the Capacitor Division of B.I.C.C. and the Telegraph Condenser Company Limited, a B.I.C.C. subsidiary. The department has sections dealing with all types of capacitors, and possesses equipment for manufacturing laboratory specimens of all kinds. It also has an extensive range of measuring facilities



Winding capacitor



Microscope and micro-analyser

for the study of initial characteristics and life performance.

The third floor houses the Drawing Office, the Diffraction & Microscopy Department and the Photographic Section.

The Diffraction & Microscopy Department is concerned mainly with the fine structure of materials and provides an analytical service of this nature to all other departments of the Organisation. It has its own research programmes, but these are mainly concerned with improvements in its own techniques.

The Photographic Section has many duties of a routine nature but it is also an essential part of the scientific facilities of the laboratories. Its equipment includes high-speed cinematography, and photographic methods are frequently used for measurement purposes. An example is in connection with the researches being carried out in the Organisation's Traction Research Laboratory at Tolworth.

#### Traction studies

Behaviour of the overhead equipment used in electric railway traction is being studied by means of dynamically-similar scale models and practically all of the measurements are being made by cinematographic or special still-photographic methods.

The only laboratory on the fourth floor is that containing the electronic computer, which is used for mathematical and engineering design problems. The computer is particularly useful for the latter, because it has a much larger store than is usually needed for strictly mathematical purposes. The remainder of the fourth floor contains the kitchen, cafeteria and lecture room.

#### Amenities

The fifth floor is devoted mainly to staff amenities, whilst the partial sixth floor is used only for plant rooms for the ventilation and mechanical services.

The whole building bears evidence of the high priority given by B.I.C.C. to research as a means of ensuring the progressive development of its products in the service of the electrical engineering industry.

#### WEST RUISLIP BRIDGE RECONSTRUCTION

The old steel bridge carrying the four British Railways Western Region tracks over the London Transport Executive's Metropolitan lines, just south of West Ruislip Station, was built in 1901 and the work of renewing its superstructure is nearing completion.

Both routes are heavily used: the Western Region lines being the main ones between Paddington, Birmingham and Chester—as well as serving the Marylebone-High Wycombe suburban line; the Metropolitan lines linking Uxbridge and Central London.

Temporary girders were laid in on the tops of the existing bridge abutments to span the Metropolitan lines underneath and speed restrictions of 10 m.p.h. will operate until about the end of May, when the renewal of the old bridge deck will have been completed. The whole of the work was staged over 10 consecutive Sundays and all four Western main lines are now running over the new superstructure.

Despite warnings to the public of delay resulting from this work, drivers have recovered most of the time lost by the restriction.

# PERSONAL

## Overseas

LT.-COLONEL H. B. EVERARD, D.S.O., A.M.I.C.E., who, as recorded in our May 5 issue, is to retire as a member of the board of Rhodesia Railways, on June 30, was born in 1897 and educated at Marlborough and Trinity College, Cambridge. His entrance to the University was deferred owing to the outbreak of war in 1914. Joining the Rifle Brigade as 2nd Lieutenant in 1915, he saw service in France, was promoted to Captain in 1916 and was wounded on the Somme. During 1918 he was engaged at the Foreign Office under the late Lord Balfour and Lord Curzon of



*Lt.-Col. H. B. Everard*

Kedleston, and was sent to Egypt and Palestine in 1919, being demobilised on his return to England at the end of that year. In 1922 Colonel Everard joined the Midland Railway as a cadet and was posted to the New Works Department. In 1924 he was appointed Resident Engineer on the construction of several new colliery branches and subsequently supervised the construction of the Mid-Notts Joint Lines. In 1931 he was appointed Chief Assistant to the District Engineer, Derby (South); three years later he was appointed District Engineer, Derby (South), and became Senior Assistant (Permanent Way), Chief Civil Engineer's Department, L.M.S.R., Watford H.Q., at the end of 1934. During the 1939-45 war he served in France and was taken prisoner in 1940. He was awarded the D.S.O. and mentioned in despatches for gallantry in the field. He resumed duties in September, 1945, as Assistant Engineer (Permanent Way), and was appointed Engineer (Permanent Way) in 1947, and became Chief Officer Engineering (Maintenance), Railway Executive in 1949. Colonel Everard was appointed General Manager of the Rhodesian railway

system in 1952. He retired from that position, while remaining on the board, in 1958.



*Mr. N. F. Stevens*

MR. N. F. STEVENS, A.M.I.MECH.E., M.I.LOCO.E., Assistant Chief Mechanical Engineer (Workshops), East African Railways & Harbours, who, as recorded in our May 5 issue, has retired, was apprenticed at the Locomotive Works in Derby after leaving Derby Technical College. He became Inspector of Materials in the Central Materials Inspection Bureau in 1930, and, two years later, was appointed Assistant in the Locomotive Works Superintendent's office at Derby. He spent a year in the Drawing Office and then became Costs Assistant to the Superintendent. Mr. Stevens joined the Kenya & Uganda Railways at Nairobi in 1937 as Assistant Works Superintendent of the Locomotive & Carriage & Wagon Works. He has been in charge at Eldoret, Mombassa, and Nairobi; District Mechanical Engineer-in-Charge, and Works Manager of the Locomotive & Carriage & Wagon Works. He became Assistant Chief Mechanical Engineer (Workshops), in 1955.

## Industrial

MR. E. TURNER, Deputy Chairman, Birmingham Small Arms Co. Ltd., has been appointed a Director of Associated Electrical Industries Limited.

MR. S. H. IRELAND has been appointed Assistant Managing Director, Consolidated Pneumatic Tool Co. Ltd. MR. L. S. BRIGHT has been appointed Financial Director, and MR. A. O. MILLER has become a Director.

MR. A. CAMPBELL has been appointed Representative for Scotland, Hilger & Watts Limited. DR. E. R. SAYER has been appointed Representative for the Midlands.

## British Transport Commission

MR. T. M. HERBERT, M.A., M.I.MECH.E., Director of Research, British Railways Central Staff, who retired on April 30, was educated at Marlborough, and at King's College, Cambridge, where he graduated with first class honours in the Mechanical Tripos in 1922, and was President of the Cambridge University Engineering Society in 1921-22. After serving as a pupil in the locomotive works of the Midland Railway at Derby, he took up a research appointment with the British Non-Ferrous Metals Research Association. He



*Mr. T. M. Herbert*

re-entered railway service with the L.M.S.R. in 1928, and, in 1930, became Secretary of the company's Advisory Committee on Scientific Research. In 1932, he was appointed Research Manager of the L.M.S.R., and in 1949, Director of Research, Railway Executive, retaining this title with British Railways Central Staff when the Railway Executive was abolished in 1953. Mr. Herbert was awarded the George Stephenson Research Prize of the Institution of Mechanical Engineers in 1930. Mr. Herbert has represented the British Railways on the Control Committee of the U.I.C. Office for Research & Experiments.

MR. E. L. FARRINGTON, Outdoor Carriage & Wagon Engineer, York, British Railways, North Eastern Region, has retired.

MR. R. SEMPLE, Divisional Accountant, Pickfords Division, British Road Services, is to retire on July 1. MR. C. P. GORMLEY, Divisional Accountant, Western Division, is to succeed him. MR. E. L. OATES, District Accountant, Preston District, has been appointed Divisional Accountant, Western

Division. MR. W. PARKINSON, District Manager, Preston District, is to be Commercial Assistant to the Divisional Manager, North Western Division. MR. W. N. CHERRY, Branch Manager, Irish Ferry Branch, Preston District, is to be District Manager, Preston District, North Western Division.

MR. G. W. ROBSON, A.M.I.MECH.E., M.I.LOCO.E., Assistant Running & Maintenance Officer, Paddington, British Railways, Western Region, who, as recorded in our May 19 issue, has been appointed Assistant General Manager with duties in the modernisation sphere, entered the service of the former Great Western Railway in 1928 as an apprentice and completed his training at Swindon Works in 1933. He served in the Drawing Office of the Chief Mechanical Engineer at Swindon until his appointment in 1941 as Assistant to the Divisional Locomotive & Carriage & Wagon Superintendent at Worcester. In 1950 he became Assistant District Motive Power Superin-



Mr. G. W. Robson

tendent, Wolverhampton. He returned to Worcester in March, 1954, as District Motive Power Superintendent, and later that year moved to Bristol as District Motive Power Superintendent. In 1956 Mr. Robson became Assistant (Mechanical) to the Motive Power Superintendent, Swindon, and in 1958, Assistant Running & Maintenance Officer, Paddington.

MR. L. S. PLASTOW, Assistant, Chief Secretary's Department, British Transport Commission, has been appointed Secretary, Eastern Area Board.

MR. I. W. STANDRING, B.A., A.M.I.E.E., Mechanical Engineer (Lifts & Escalators), London Transport Executive, who, as recorded in our May 12 issue, has been appointed Contracts Officer, Acton, is 61 years of age, was educated at Charterhouse School and received his early engineering training at Pembroke College, Cambridge, and Faraday House. Later he joined the General Electric Company at Witton, Birmingham. In 1924, Mr. Standring joined London Transport as an engineering cadet,

and two years later transferred to the staff of the Union Construction & Finance Company at Feltham, which was engaged



Mr. I. W. Standring

in the construction of tramcars, trolley buses and Underground rolling stock. Mr. Standring became engineering assistant to the Mechanical Engineer (Railways) at Acton Works in 1932 and, in 1938, Indoor Assistant to the Assistant Superintendent of Lifts & Escalators. He was made an officer of the London Passenger Transport Board in 1941, when he became Assistant Superintendent of Lifts & Escalators, and in 1942, he was appointed Superintendent, Lifts & Escalators, a title which later became Mechanical Engineer (Lifts & Escalators).

MR. W. B. R. COURT, Staff Assistant to the Commercial Officer, Paddington, British Railways, Western Region, has retired.

MR. J. BALMER, Stationmaster, Manchester Central Station, British Railways, London Midland Region, has been appointed Stationmaster Manchester, Piccadilly.

MR. R. SALLIS, Audit Assistant, Audit Division, British Transport Commission has been appointed Assistant Director of Studies, British Transport Staff College, Woking. MR. A. E. GREEN, Head of Section (Transit & Routes), Traffic Department, Euston, British Railways, London Midland Region, has been appointed Assistant Rolling Stock Officer, British Railways, Central Staff Traffic Department, British Transport Commission.

MR. K. A. KINDON, Traffic Manager (Tees-side), British Railways, North Eastern Region, has been elected President of the Tees-side & South West Durham Chamber of Commerce.

MR. E. P. LUMLEY, M.I.E.E., M.I.LOCO.E., Assistant Mechanical Engineer (Works-Railways), London Transport Executive, who, as recorded in our May 12 issue, has been appointed Mechanical Engineer (Lifts & Escalators), is 45 years of age. He was educated at Watford Grammar School and

received his technical education at the Regent Street Polytechnic. Mr. Lumley joined the District Railway as an apprentice in 1932 and was transferred to the technical staff in January, 1938. He was appointed Section Controller in September, 1941, and became a Depot Engineer in August, 1947. In November, 1947, he was transferred to White City Depot and was responsible for the transfer of the depot maintenance work to the new depot at Ruislip on the opening of the Central Line extension to West Ruislip in November, 1948. He became Acting Divisional Depot Engineer "B" in April, 1950, responsible for the maintenance of the rolling stock on the Central, Northern and Piccadilly lines, and was confirmed in that appointment in the following April when he became a Principal Executive Assistant. Mr. Lumley was appointed Assistant Mechanical Engineer (Works-Railways) and an officer of the Executive in January, 1959, when he became responsible for the day-to-day functions of Acton Works.



Mr. E. P. Lumley

## Institute of Transport

Following the announcement of the election of MR. JAMES AMOS as President for the year 1961-62, the Institute of Transport has announced its officers for that year as follows:

### Vice-Presidents:

MR. KEITH GRANVILLE, Chairman, B.O.A.C. Associated Companies Limited.

MR. H. C. JOHNSON, General Manager, British Railways, Eastern Region.

MR. F. LEMASS, General Manager, Coras Iompair Eireann.

MR. G. W. QUICK SMITH, Adviser (Special Projects), British Transport Commission.

MR. ALEX. J. WEBB, Assistant Operating Manager (Railways), London Transport Executive.

MR. E. G. WHITAKER, Transport Adviser to the Board, Unilever Limited.

### Hon. Treasurer:

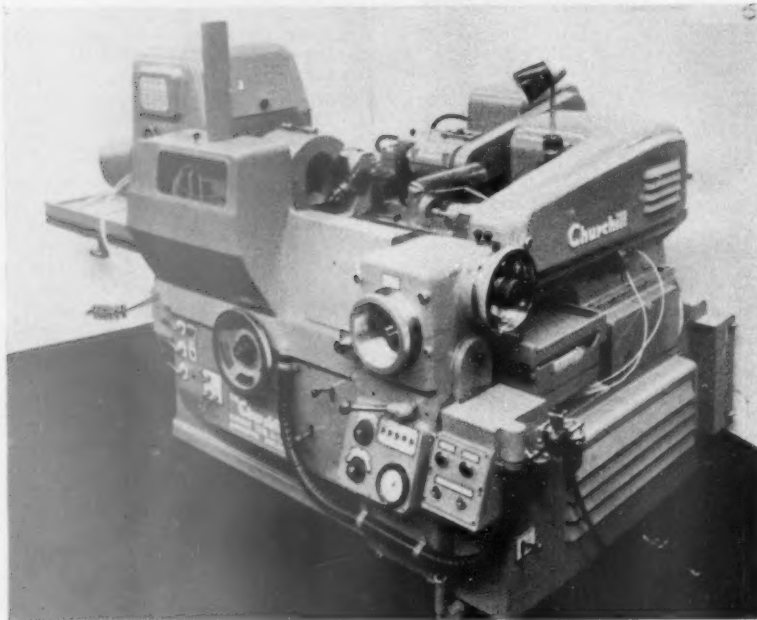
MR. F. C. ASGILL, formerly Vice-Chairman, Stephenson Clarke Limited.

### Hon. Librarian:

MAJOR-GENERAL SIR REGINALD KERR, General Manager, British Waterways.



# NEW EQUIPMENT *and Processes*



## GRINDING MACHINES

Three machines, exhibited at the British Trade Fair in Moscow, have been selected from the Churchill range to demonstrate the contribution which can be made in the field of automatic and semi-automatic manufacture, whereby comparatively unskilled labour can be employed.

The "HBM" model, illustrated at the top of this page, is an automatic internal and face-grinding machine with automatic loading, the grinding and sizing of both the bore and external face being within the automatic cycle. The machine can also be arranged for diamond sizing or plug-gauge sizing to suit the component being ground.

The machine has a swing capacity of 19 in. dia. over the table and 12 in. dia. inside the work guard. Bores up to a maximum dia. of 8 in. can be ground. The maximum length of bore which can be accommodated is 5½ in.

The "EC" centreless grinder has automatic size control and automatic loading, automatic wheel truing, and compensation for wheel wear. This machine, shown below, is equipped to finish grind needle rollers and is capable of producing these, ⅜ in. dia. and 1 in. long, to a tolerance of 0.0002 in. and a finish of 2 micro in., at the rate of between 12,000 and 15,000 an hour. Normally the basic machine will grind up to 6½ in.

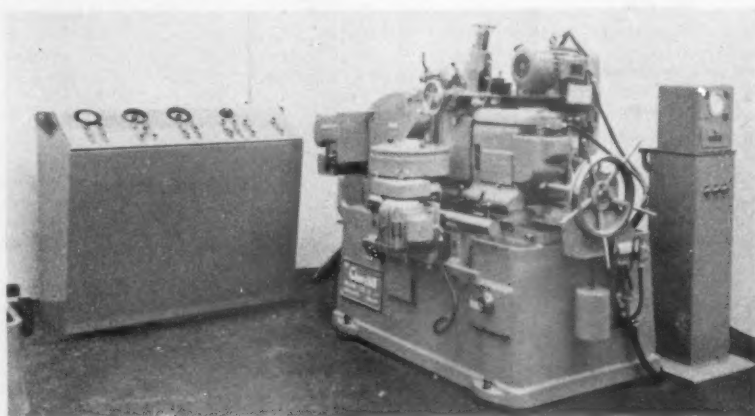
The third model is the "BW." This is a fully-automatic plain cylindrical

grinding machine which has automatic loading of the components, together with a completely controlled operation cycle which provides for the automatic grinding of the component, gauging to size, and automatic ejection. Provision is also made up for automatic wheel truing and compensation for wheel wear. Like the "EC" machine capacity is governed by that of the loading fixture.

The basic machine will handle work up to a diameter of 10 in., and has a grinding wheel of 20 in. dia.

In addition to the usual range the maker supplies special applications for railway workshops.

Further information, on all models, is obtainable from the Churchill Machine Tool Co. Ltd., Broadheath, Manchester.



## EXTRUDED ALUMINIUM GRILLES

A range of grilles and registers suitable for many applications in a variety of positions, has been introduced by Barcross Limited who are sole United Kingdom agents for, and manufacturers of, American Titus air-distribution equipment. These fittings are available, as standard production items, in extruded aluminium.

Prices have yet to be fixed, but it is anticipated that they will generally be 10 per cent cheaper than comparable mild-steel fabrications.

Full details are available from the maker, Bentinck Road, West Drayton, Middlesex.

## GRAVITY CONVEYORS

A development which it is claimed will open up new fields for gravity-conveyor systems is announced by Dexion Limited. The new product is a specially-treated nylon Glidewheel. Designed for operation without the bush assembly normally found in conveyor wheels, it is weather-proof and non-corrosive. Lubrication and maintenance are eliminated. The material is hard-wearing and the wheel has a long working life.

The inertia of the ½ oz. nylon wheel is improved over that of the previous ball-bearing wheel, and the more generous proportions (dia. 2.312 in.; width ¾ in.) afford a wider load-bearing surface, giving better tracking on shallow gradients and smooth conveyance.

The nylon version is designed for use in association with the company's range of slotted angle. As it is completely weather-proof, used in conjunction with galvanised angle it makes a permanent outdoor gravity conveyor a practical proposition.

Particulars available from Dexion Limited, Maygrove Road, London, N.W.6.



## SIMPLEX LOCOMOTIVE

A 28 b.h.p.  $3\frac{1}{2}$  ton Simplex locomotive has been introduced, which incorporates Simtran transmission. This drive uses a fluid coupling, combined with a constant-mesh gearbox containing two hydraulically-operated multiplate clutches for reversing and change of speed.

All the working parts of the transmission are enclosed; it uses the same oil as the diesel engine, eliminating the need to store more than one grade.

The transmission is so designed that it may be incorporated in earlier Simplex locomotives having conventional gear-boxes and manually-operated clutches. A conversion kit is available for this change.

The engine is a direct-injection Dorman, with C.A.V. fuel-injection system, and mechanical governor to control speed.

Average fuel consumption is reported to be between two and three gallons an eight-hour working day.

Optional extras include battery or battery-car electric lighting, exhaust quenchers, and an engine-usage recorder.

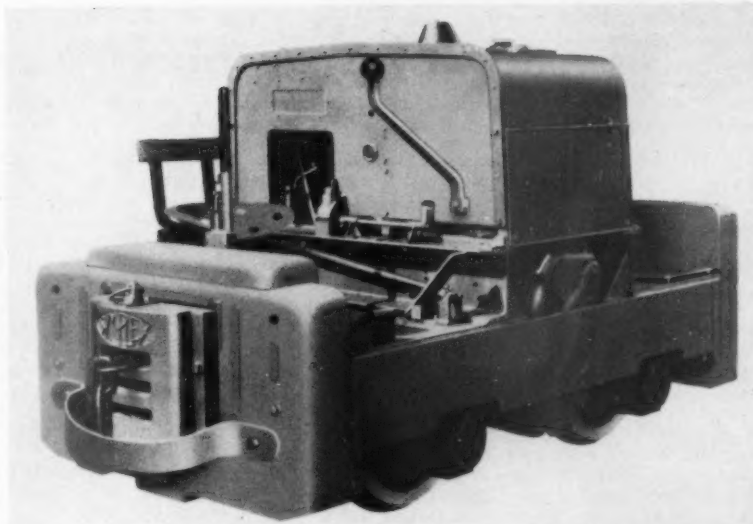
Additional information may be obtained from Motor Rail Limited, Simplex Works, Bedford.

## SEAG WAGONS

In conjunction with the German Federal Railways a wagon was developed with a sliding roof; later, to exploit the possibilities of using fork-lift trucks on a large scale, sliding sides were introduced. Both types are now extensively used in Western Europe.

Features of the design shown are the two roof sections, made of light alloy, and the two side panels, manufactured from mild steel. These slide one over the other to expose half the body. All sections can be easily opened or closed by one man.

The wagon illustrated is one built on a standard British tube-wagon under-frame, but wagons of various lengths can be supplied.



Wagons of this type, known as SEAG sliding-side-cum-sliding-roof-wagons, are claimed to offer the unrestricted loading and unloading facilities of open wagons, while at the same time affording the protection against weather and pilfering, of covered stock. Tests carried out in Germany have shown unloading to occupy but one sixth of the time previously required with conventional wagons.

Full particulars are available from the British licensee, Powell Duffryn Engineering Co. Ltd., Cambrian Works, Maindy, Cardiff.

## UPHOLSTERY MATERIAL

A new high-quality P.V.C.-coated 50-in. upholstery fabric, which, it is claimed, has all the properties of luxury leather, but is only a fraction of its price, is being marketed in nine colours under the trade name "Everflex Plus."

This material, which is on a broken twill backcloth, gives a soft feel, handle and appearance, for such a heavy one. It is said to be tough, durable and flexible,

and not easily damaged by acids or alkalis.

An anti-soil finish is imparted, which, if necessary, can be cleaned with a damp cloth, or warm water and mild soap.

Full details may be obtained from Bernard Wardle (Everflex) Limited, Caernarvon, North Wales.

## ELECTRODE

Elimination of welding fumes, together with improved slag detachability, are features claimed for the new Diadem "Ruby" range of electrodes.

This mild-steel electrode is intended primarily for fast high-quality welds in the downhand position, although it is also suitable for vertical and overhead work. It complies with BS. 639-1952, and BS. 1856 regarding mild-steel welding requirements, and such other British Standards as BS. 2642 covering the metal arc welding of medium-tensile weldable structural steel to BS. 968. It is said to be particularly suited to the production of smooth dense welds of high strength, ductility and toughness by welders of only limited experience.

The "Ruby" range is designated E.217 on the BS. 1719 coding and E. 6012 on the AWS-A.S.T.M. scale. The mechanical properties include a yield point of 24/28 tons/sq. in., an ultimate tensile strength of 29/34 tons/sq. in., and an Izod impact value of 50/70 ft.lbs. The chemical analysis is carbon 0.08-0.10 per cent, silicon 0.11-0.14 per cent, manganese 0.55-0.65 per cent, sulphur 0.025-0.035 per cent, phosphorus 0.015-0.025 per cent.

The electrodes are produced in 10 sizes, from 16 gauge to  $\frac{3}{8}$  in. and are supplied in 14 lb. or 7 lb. standard packs, according to size.

Further information is available from Cooper & Turner Limited, Vulcan Road, Sheffield, 9.

# Ministry of Transport Accident Report

## New Mills (Central) Station October 12, 1960, British Railways, London Midland Region

Colonel W. P. Reed, Inspecting Officer of Railways, Ministry of Transport, inquired into the collision, at about 4.25 p.m. on October 12, 1960, between a diesel passenger train and a freight train near New Mills (Central) Station on the former Great Central & Midland Joint Line from Manchester in the London Midland Region of British Railways. The 3.50 p.m. Up multiple-unit passenger train from Manchester (Piccadilly) to New Mills (Central), carried out its booked stop at Strines Station, the one before New Mills, and on leaving passed the Strines starting signal at danger. It collided at about 35 m.p.h. with the rear of the freight train, which was standing at New Mills (Central) home signal.

The leading coach of the diesel train was wrecked, but the two passengers in it, both school children, escaped with minor injuries. The driver had a miraculous escape, being apparently thrown through the disintegrated front of the coach into the brake-van of the freight train. The latter's guard, though badly shaken, was not injured.

### Curving gradient

The day was fine and clear. The line from Strines to New Mills (the stations are 1½ miles apart) is for the most part curved and climbs at gradients of 1-in-114 and 1-in-100. The signals on the route are a mixture of upper- and lower-quadrant semaphores, the Up home, Up starting and Down home signals at Strines being all of the upper-quadrant type. Because of the curvature, the Up starting signal is on the right side of the line. Its background makes it rather inconspicuous, but the Down home signal is outlined against the sky.

At New Mills there is a double-line junction, facing for Up traffic, for the single-line branch leading to Hayfield. The Up distant signals are 975 yd. from the Up home signals, which in turn are 273 yd. short of the signalbox, which is beyond the station and close to the junction.

Comprehensive block controls are provided on this route. These include 200-yd. berth track circuits in the rear of the Up home signals at Strines and New Mills. These put the Up block instrument to Train on Line and operate an indicator and annunciator, the latter sounding when the home signals are at danger. There is sequential locking between the home and starting signals at Strines, and the starting signal lever needs a Line Clear release from New Mills (one release, one pull). Neither Strines nor New Mills can give Line Clear to the box in rear unless these home signal levers are in the normal position.

Thus the Strines signalman must replace his home and starting signals to normal before he can accept a second train. The New

Mills signalman cannot "forget" a train standing at his home signals and give "Train Out of Section" for it, so allowing the Strines signalman to offer a second train.

Evidence showed that the Up freight train was dealt with normally. It was held at New Mills home signal until a Down diesel passenger train from Hayfield had cleared the junction ahead. When asked why he had not brought the freight train to his starting signal, the New Mills signalman said that, because of the steep rising gradient and sharp curve through the junction, it was better to hold freight trains at the home signal, as otherwise they might stall.

The Strines signalman said that it was often necessary to hold Up trains at his starting signal while awaiting Line Clear ahead. He always carried out Rule 39 (a) and, to do so, did not pull off his home signal until the train had entered the berth track-circuit in rear. He followed this procedure in the case of the Up diesel train.

### Usual procedure

He added that it was usual for Up trains to draw toward the starting signal when it was at danger after station duties had been completed. They then used to stop with the guard's compartment opposite the signalbox so that the guard could carry out Rule 55. This train, which passed him as he was recording the Train Entering Section for the Down diesel train, did not stop, and he did not notice either the driver or the guard. He saw the train pass the starting signal at danger, and said, "this signal was definitely 'on' when the driver passed it." He promptly sent the Train Running Away signal to New Mills but, despite making every effort, the New Mills signalman could not get the freight train moving in time to mitigate the collision.

The driver of the diesel train was severely shocked and injured by the collision, and was still in bed when his evidence was taken a month later. He said that the distant signal was "on" as he approached Strines, but the home signal was "off" when it came within his view at a distance of 300-400 yd. As the train began to move out of Strines Station he saw the Down home signal go to the "off" position, and he said that he also saw his own signal, the Up starter, in the "off" position. He travelled through the section at normal speed, passing New Mills distant signals in the "on" position. As soon as he saw the brake-van of the train ahead, he applied his own brakes and released his dead man's handle. He heard his brakes binding on the wheels before the collision took place.

He was sure that the Strines home signal was "off" when he first saw it, and he insisted that he ought to have been positively checked there if the starter was at danger. He also said that the Strines signalman ought to have heard him accelerating and changing gear as he passed the box, and ought to have shown a red flag to the guard if the starting signal had been at danger.

Tests showed that the equipment was in order at both signalboxes. In particular,

tests were made at Strines to see whether, by slamming the starting signal lever back in the frame, it was possible to cause the chain links in the signal wire, where it passes around pulleys under and in front of the signalbox, to jump and become jammed so that the signal remained "off" when the lever was replaced in the frame. Frequent tests failed to cause this to happen.

### Inspecting Officer's conclusions

Colonel Reed pointed out that there was a conflict of evidence between the Strines signalman and the driver of the diesel train, relating both to the position of the starting signal semaphore arm and carrying out of Rule 39(a) with respect to the home signal. But he was satisfied that there was no technical fault in the signalling equipment. He concluded that there were only two ways in which the Strines starting signal could have been "off" when the driver passed it.

The first was that the New Mills signalman, in the short interval of about 2 min. between the departure of the freight train from Strines and its arrival on the berth track circuit at his own home signals, should have prematurely given "Train out of Section" for this train and have accepted the diesel train. Even so he would have had to have ignored the warning of the annunciator when the freight train came on his berth track circuit. Moreover, the Strines signalman would have had to have ignored the unrealistically short interval of time between his giving the "Train Entering Section" for the freight train and receiving "Train Out of Section" for it. Both signalmen would have had to omit the appropriate entries in their Block Registers. Colonel Reed was sure that none of this had happened, but that both signalmen knew the situation of the Block on the Up line, and that the Strines signalman had no intention of admitting the diesel train into the Block section.

The only other way in which the starting signal could have been "off" was if it had remained in the "off" position when its lever was replaced in the frame after the freight train had passed. In view of the tests that were made, Colonel Reed said that he could not accept this unlikely solution unless there was strong corroboratory evidence to support it.

### No evidence of jamming

Whether or not the diesel driver's claim that the home signal was "off" when he first saw it was correct, the emphasis which he placed on it suggested that he expected the starting signal to be at clear. His statement would support the conjecture that the signalman had pulled off the starting signal by mistake, though it is clear that he did not do so. It did not provide supporting evidence for the possibility that the starting signal had remained off by accident, through the wire becoming jammed.

In Colonel Reed's opinion, the evidence was very strong that the signal responded properly when the lever was replaced in the frame, and that it remained at danger thenceforth. Colonel Reed could only con-

clude that the driver of the diesel train overlooked it, and assumed that it was "off" as he started from the platform. Even if the claim that there was no check at the home signal was correct, there was still no excuse for relaxing concentration when approaching the starter, especially after passing the distant at caution and in view of the intervening stop at the platform.

Although, Colonel Reed said, the Up starting signal at Strines was not as conspicuous as others, because of its background, it was not difficult to see, and he did not consider that the circumstances of this accident gave grounds for recommending its re-siting. He understood that last year the signal siting committee examined this and other signals which are on the right side of the track, with a view to re-positioning them on the left side and providing them with repeaters where the curvature restricted the view. This work was to be done as the signals became due for renewal.

## Staff & Labour Matters

### Talks on rail hours

Representatives of the British Transport Commission and the three railway unions will meet on June 7 to consider the next move for shorter hours for 500,000 employees of all grades.

The last proposal by the commission was accepted by the N.U.R. and A.S.L.E.F. but rejected by the Transport Salaried Staffs Association, which decided to press for a general reduction of hours to 38. All three unions have decided to submit new pay claims, but when this will be done may depend on a settlement of the hours question.

## New enquiry office at Bradford Exchange Station

Bradford Exchange Station has a new, much larger and more up-to-date enquiry office. The front wall faces the circulating area in the station concourse and has large plate glass windows. These contain open panels of the room-dividing type for poster displays, and are planned to give added light to the interior. The office itself has been designed with racks for literature so that passengers can easily see the various excursion handbills and illustrated brochures which are on display. In addition, interest is created by the modern décor and the panels of pictorial posters. A gigantic aerial photograph of London dominates one wall. Measuring 18 ft. long x 12 ft. high it draws attention to a subsidiary panel headed "What's on in London." On this panel, each month, will be posted a London diary of events, together with associated rail facilities to the capital.

The reservations counter is a continuation of the enquiries counter and to make the division pronounced a sharp contrast in the colouring of each part is effected. The top of the reservation portion is faced with mottled grey linoleum and the front is of black laminated plastic. The enquiry portion has a jade green linoleum top with a grey laminated plastic front. Plate glass panels let into the top of the counter protect principal train service sheets.

The woodwork is of natural Iroko, a tropical African hardwood of varied shades

of gold which is akin to the teak family for its hard-wearing properties. The floor is covered with black marbled linoleum and the ceiling has blue acoustic tiles flecked with black. Three walls are of pale grey faced plastic cloth and the end wall is of dark blue. Concealed ventilation has been installed and the heating is of the convector type from a central heating system. The new enquiry office was designed by the Architect to the Chief Civil Engineer, British Railways, North Eastern Region, York, and the main contractor was F. & J. Watkinson, Bradford.

## United Railways of the Havana liquidation

In the Chancery Division on May 15 Mr. Justice Pennycuik adjourned generally an application by the liquidators of United Railways of the Havana and Regla Warehouses, in members' voluntary winding-up since 1954, to discharge an order by the Registrar dismissing their application for leave to make a second interim return of capital to the company's consolidated stockholders and to concur with Royal Exchange Assurance in applying a limited sum towards redemption of the Second Income loan stock of the company.

The company formerly operated a railway system in Cuba. It was sold to the Cuban Government in 1953 for U.S. \$13m. (£4,695,807), of which £2,228,818 has been applied in redeeming secured creditors, First Income loan stockholders.

Mr. Richard Hunt, for the liquidators, said the application was opposed by the First Pennsylvanian Banking and Trust Company, trustees for the holders of Equipment Trust Certificates issued under a trust agreement in 1921. There was an outstanding amount due to them which could not be paid because it had not yet been ascertained.

The opposition was because they contended that there was a risk that another claimant, Co-operativa de Seguros, in respect

of unpaid premiums on workmen's compensation policies, might appear on the scene before the Equipment Certificate trustees had been paid, and if its claim was allowed in full, there would not be sufficient to pay the trustees in full. The liquidators' view was that, on the facts, the possibility of Co-operativa's claiming was so remote that it could be safely disregarded.

There was in hand in the liquidation approximately £609,000, and the liquidators were hoping to distribute about £329,000. They would retain £280,000, which would give a surplus over all known debts other than any debt due to Co-operativa.

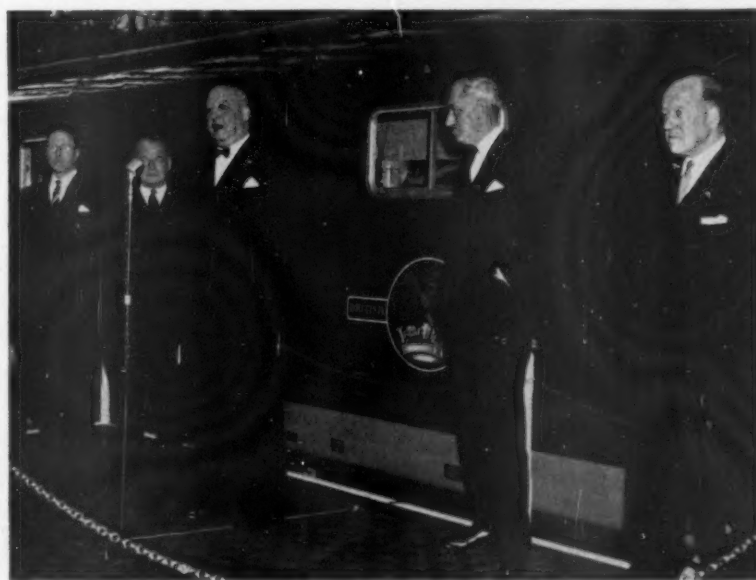
The judge said he was disposed to allow the distribution to proceed provided that the Equipment Certificate trustees could be protected. It seemed shocking that this large fund should be held up for nearly eight years in order to meet an improbable claim.

The judge adjourned the motion generally, giving liberty to restore it after July 1, and directing that Co-operativa be requested to lodge a proof of debt in the meantime if it wished to pursue its claim. His lordship directed that an order be submitted for approval by the Court for distribution on terms that a payment be made to trustees to hold for the Equipment Certificate trustees as paramount beneficiaries to the extent of their debt when quantified, and subject thereto for the benefit of further distribution.

## Hymek handing-over ceremony

Illustrated below is part of the ceremonial handing-over to the Western Region of the first Hymek locomotive. This ceremony, referred to on page 554 in our last issue, took place at Paddington on May 16.

Seen in the illustration, from left to right, are Mr. R. A. Smeddle, Chief Mechanical & Electrical Engineer, Western Region; Mr. R. F. Hanks, Chairman, Western Area Board; Mr. H. Wilmot, Chairman, Beyer Peacock (Hymek) Limited; Mr. J. R. Hammond, General Manager, Western



Mr. H. Wilmot speaking at the recent Hymek handing-over ceremony



Region; and Mr. K. W. C. Grand, Member, British Transport Commission.

## Malayan Minister in Britain

On May 10, Enche Sardon bin Haji Jubir, the Malayan Minister of Transport, visited the exhibition at Marylebone held in celebration of the Golden Jubilee of the Institution of Locomotive Engineers. In the lower of the two illustrations on this page he can be seen inspecting the English Electric 2,700 h.p. experimental gas-turbine locomotive with Sir John Benstead, Deputy Chairman, British Transport Commission, left, and Mr. G. Collingwood, Managing Director of the Vulcan Foundry Limited and Robert Stephenson & Hawthorns Limited.

The top illustration shows the Minister with members of his party outside the diesel rail-car shop during his visit to Stratford Works on May 15. With the Minister are, from left to right, Mr. H. R. Gomersall,

Regional Planning Officer, British Railways, Eastern Region; Mr. P. Gray, Works Manager, Stratford; Mr. F. Beasant, Deputy Manager, Traction Division, Brush Electrical Engineering Co. Ltd.; Mr. N. Micklethwaite, Depot Master, Stratford; Mr. A. Frampton, Chairman, Brush Electrical Engineering Co. Ltd.; Mr. E. T. Williams, General Manager, Malayan Railway; Mr. J. Woolnett, Assistant District Running & Maintenance Engineer, Liverpool Street, and Mr. D. Barrett, Assistant Depot Master, Stratford.

## Questions in Parliament

### East African Railways staffs' rights

Mr. James Callaghan (Cardiff S.E.—Lab.) asked the Secretary of State for the Colonies on May 9 if he would receive a delegation from the Asian Postal Union, the Railway Asian Union, and the East African High Commission Asian Staff Association to consider their complaints about their future

conditions of service.

Mr. Ian MacLeod, in a written answer, said that the position of the Asian civil servants in East Africa was a serious and difficult matter which he was urgently considering in consultation with the East African Governments and Administrations. As soon as he could usefully do so he would willingly see a delegation of the recognised Asian staff associations.

Mr. Callaghan also asked the Colonial Secretary on May 9 what reply he had made to the East African High Commission Association of Professional Technical and Executive Officers, the East African Railways & Harbours European Staff Association, and the East African Posts & Telecommunications European Staff Association, who had endorsed the complaints made to him about their future conditions of service following a special general meeting of the Senior Civil Servants' Association in Kenya.

Mr. MacLeod referred him to the reply to his previous question.

### Pitsea Rail Crash

Mr. Edward Gardner (Billericay—Con.) asked the Minister of Transport on May 17 why the Press and public were excluded from the inquiry into the recent rail crash at Pitsea.

Mr. Marples told him in a written answer that the Press and public were excluded from part of the inquiry because the Inspecting Officer considered that the position of some of the witnesses might have been prejudiced if their evidence was given in public. The Inspecting Officer's report would be published and would contain, along with his conclusions, a summary of the evidence given both in public and in private.

### RAILWAY SITES FOR RENT

The British Transport Commission is inviting offers to rent sites along closed lines on the Forth & Clyde and Blane Valley branch lines. Some of these are suitable for development as commercial caravan sites. Twelve sites are offered to rent in Stirlingshire. Four of these—at Kippen, Port of Menteith, Buchlyvie and Balfron—can be developed for caravans. The remaining sites are at Gartness, Killearn, Dumgoyle, Blanehead, Strathblane, Campsie Glen, Milton of Campsie, and Lennoxton. There is also a site at Gartmore, Perthshire, which could be used for caravans. Stations at Kippen, Buchlyvie, Port of Menteith, Strathblane and Balfron have buildings which can be adapted for dwelling accommodation.

### OPERATIONAL RESEARCH CONFERENCE

Operational research will be the subject of a one-day conference organised jointly by the Operational Research Society and the British Institute of Management at the Connaught Rooms, London, W.C.2, on June 6. The speakers will include the Conference Chairman, Mr. R. J. Kerr-Muir, Director, Courtaulds Limited; Mr. R. H. Collcutt, British Iron & Steel Research Association; Mr. A. Battersby, British Petroleum Co. Ltd., and Mr. D. Lamberth, J. Lyons & Co. Ltd. The afternoon will begin with discussion groups, and close with a brains trust session.



*The Malayan Minister of Transport at Stratford Works*



*The Malayan Minister inspecting the English Electric gas-turbine locomotive at the Golden Jubilee exhibition at Marylebone*



## CONTRACTS AND TENDERS

### Structural steelwork for English Steel Corporation

English Steel Corporation Limited has placed contracts for the structural steelwork for its £26 million works at Tinsley Park, Sheffield, with Braithwaite & Co. (Structural) Ltd., and Alex. Findlay & Co. Ltd. The total value of these contracts is approximately £1½ million.

British Railways, London Midland Region, has placed the following contracts:

Industrial Engineering Limited: renewal of roof glazing at Liverpool Lime Street

R. M. Ridd, B. Paine & Co. Ltd.: cleaning and painting of exterior of St. Pancras Chambers

Edward Wood & Sons Ltd.: laying of fire main around the Diesel Maintenance & Carriage Shed at Etches Park Carriage Sidings, Derby.

Furniss & Company: patent glazing of roof at Fleetwood passenger station

J. A. Brooks (Southport) Limited: low pressure hot water heating and ventilation at Birkenhead South diesel servicing & maintenance depot

Robert Myles Limited: construction of Staff Association Club building at Aintree, Liverpool

Aerocem Limited: grouting the embankment at Althorp Park on the Northampton and Rugby line

Industrial Engineering Limited: repairs to roof sheeting and glazing at Manchester Central passenger station.

### BOARD OF TRADE

The Export Services Branch, Board of Trade, has received calls for tenders as follow:—

#### From India:

4 500 kVA. transformers. No. of phase: 3-phase, 50 cycle. No. load voltage: HV: 11,000 V. (Primary). LV: 3,300 V. (Secondary). Connection: HV: Delta, LV: star. Vector group Ref.: 41DY11. Transformer Tappings:  $\pm 3$  per cent — 6 per cent — 9 per cent. Temperature rise to be 40 deg. C. on top oil or 50 deg. C. by resistance. (Maximum ambient temperature in summer is 115 deg. F.)

The issuing authority is the General Manager, Singareni Collieries Co. Ltd., Kothagudum Collieries P.O., Bhadrachellam Road Station, Central Railway, Deccan, to whom bids should be sent. The tender No. is Eng. 180/61. The closing date is June 30, 1961. The Board of Trade reference is ESB/14903/61.

5 silicon transformer rectifier units, with d.c. output: 75 kW., 230 V., two wire. a.c. input: supply 400/440 V. 3 phase, 50 cycle. The equipment should comprise of a silicon rectifier with its associated transformer suitably enclosed in the main transformer tank. The equipment must be suitable for use underground

in coal mines and to conform to relevant B.S. specification 355.

The issuing authority is the General Manager, Singareni Collieries Co. Ltd., Kothagudum Collieries P.O., Bhadrachellam Road Station, Central Railway, Deccan, to whom bids should be sent. The tender No. is ENG/178/61. The closing date is June 28, 1961. The Board of Trade reference is ESB/14901/61.

#### From South Africa:

V.H.F. radio telephone equipment as detailed in accordance with S.A.R. specification EW(C)2/61:

- 12 10-W. portable radio telephones
- 8 directional aeriels
- 4 omni-directional aeriels
- 500 ft. low loss co-axial cable
- 8 30-ft. portable steel tube masts
- 8 "walkie-talkie" sets including one spare battery for each set
- 4 sets of special shock mountings
- 8 portable rectifier battery chargers
- 4 portable petrol-electric battery charging sets
- 4 light-weight battery chargers for "walkie-talkie" sets
- Installation and commissioning of equipment

Maintain the installation for a period of one year.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. C.8639: V.H.F. Radio Telephone Equipment" should be addressed to: Chairman of the Tender Board, P.O. Box 7784, Johannesburg. Local representation is essential. The closing date is June 16, 1961. The Board of Trade reference is ESB/14198/61.

- 3 electric motor driven, two stage, water cooled, stationary air compressors
- or 3 electric motor driven rotary type compressors

Spares. Fully dimensioned velograph or litho prints on tracing cloth.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes should be endorsed "Tender No. F. 8664: Air Compressors," and should be addressed to the Chairman, Tender Board, P.O. Box 7784, Johannesburg. Local representation is essential. The closing date is June 16, 1961. The Board of Trade reference is ESB/15893/61.

- 168 filters, air, 5 ply, for class SE electric locomotives, to S.A.R. drawing CE. No. A.215/15876

#### Alternatively:

168 dry type air-filters with suitable dimensions to replace filter panels specified above but designed to incorporate an easily replaceable expendable filter element while the metal frame is to be retained. The cost of the replaceable element must be indicated separately

Expendable element only, referred to in item above

- 84 filters, air, 5 ply, for class ES electric shunting locomotives to S.A.R. drawing CE. No. A.38/15821.

#### Alternatively:

84 as for para. 2, but with suitable dimensions to replace filter panels specified in para. 4

Expendable elements only referred to in item above.

The issuing authority is the Stores Department, South African Railways. Bids endorsed "Tender No. K.8693: Air Filters," should be addressed to: Chairman, Tender Board, P.O. Box 7784 Johannesburg. Local representation is essential. The closing date is June 2, 1961. The Board of Trade reference is ESB/15892/61.

#### From Sudan:

- 11 items of electrical fittings, including tubes, lanterns, reflectors, gear boxes, plastic conduits, and bitumen infused paper.

The issuing authority is the Office of the Controller of Stores, Sudan Railways, Stores Department, Atbara, to which bids should be sent. The tender No. is 2375. The closing date is June 22, 1961. The Board of Trade reference is ESB/15443/61.

- 1 wheel lathe shelter, in accordance with B.S.S. No. 449 (1959).

The issuing authority is the Office of the Controller of Stores, Sudan Railways, Atbara, to which bids should be sent. The tender No. is 2376. The closing date is June 26, 1961. The Board of Trade reference is ESB/15447/61.

- Materials for the extension to the diesel shop at Khartoum North including: roof trusses, sheeting, gutters, stanchions and bed plates.

The issuing authority is the Office of the Controller of Stores, Sudan Railways, Atbara, to which bids should be sent. The tender No. is 2377. The closing date is June 29, 1961. The Board of Trade reference is ESB/15448/61.

#### From Greece:

- 1 tube reducing and expanding machine
- 1 machine for cross-head unwedging
- 1 foundry furnace for brass.

The issuing authority is the General Manager, Hellenic State Railways (SEK), 34, Themistocleous Street, Athens, to whom bids should be sent. The tender No. is 5052. The closing date is June 9, 1961. Local representation is essential. The Board of Trade reference is ESB/15855/61.

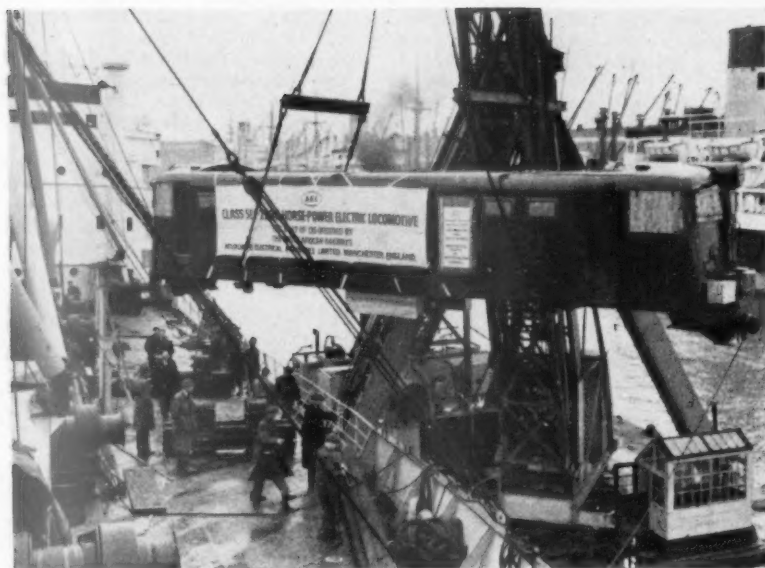
#### From Victoria:

- 9 auxiliary transformers, 50 kVA. 22,000/230 V. 50 cycle, outdoor type, with oil.

The issuing authority is the Secretary, Victorian Government Railways, Melbourne, C.I., to whom bids should be sent. The tender No. is 61.932. The closing date is June 7, 1961. The Board of Trade reference is ESB/15483/61.

Further details relating to the above tenders together with photo-copies of tender documents, unless otherwise stated, can be obtained from the Branch (Lacon House, Theobald's Road, W.C.1).





A.E.I. locomotive destined for South African Railways

necessity. Grants made from the Casualty Fund during the month of April amounted to £492 16s.

**Census forms by rail.** The recently completed census forms for the whole of Scotland travelled by rail, in containers, to the Office of the Registrar-General for Scotland on May 19.

**Locomotive order completed.** The illustration above shows an A.E.I. 2,280 h.p. 3,000-V. d.c. electric locomotive for South African Railways going aboard the s.s. *Clan MacIntyre*. This was the final locomotive of an order for 135, worth £7 million, ordered in 1957, the largest single order for locomotives ever placed in Britain.

**S.N.C.F. order.** The French Railways have ordered 20 diesel-electric locomotives, the first of which will be placed in traffic next year. These units, which will have the Bo-Bo wheel arrangement, will be powered with engines of from 2,000 to 2,400 h.p. One motor will be provided on each bogie and the electrical equipment will be continuously rated at 2,400 h.p. Builders participating in the order are Société Anonyme des Etablissements Brissonneau & Loty, Le Matériel de Traction Electrique, Société Oerlikon, and Société Générale de Constructions Mécaniques.

**£3 million for railways.** An expenditure of £3 million has been approved by the Transport Advisory Council of the East African High Commission and its railways and harbours sub-committee for improvements and new rail projects in East Africa.

**Arts & crafts exhibition at York.** The North Eastern Region of British Railways' Staff Association annual exhibition of arts & crafts was staged in the Railway Institute, York, May 4, 5 and 6. There were 359 entries in 27 classes from 82 exhibitors from all parts of the Region. The exhibits were judged by: Mr. C. H. Smith, Principal;

Mrs. M. Bromly, Head of Dress Department; Mr. R. E. Bird, Head of Arts Department, from the College of Art & Industrial Design, Newcastle, and Mrs. K. Blenkhorn, Huddersfield.

**French railway map.** French National Railways has produced a map, reproduced below, which shows the places which can be

reached from Paris by train in an evening or a night, both in France and the neighbouring countries.

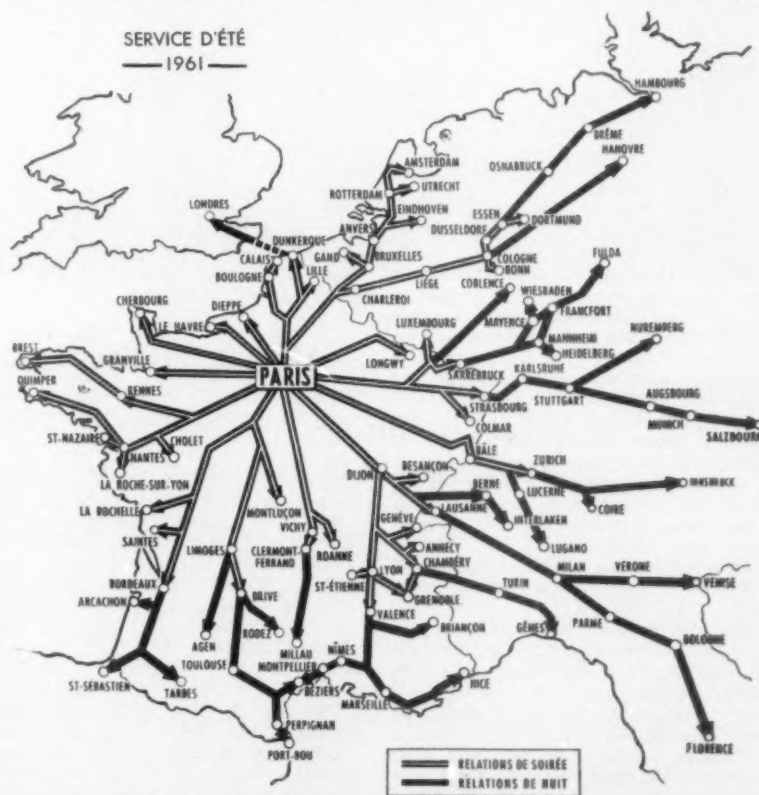
**Institute of Transport week-end conference.** The programme for the Institute of Transport week-end conference at New College, Oxford, from September 22-25 will be circulated to members with the May issue of the Journal.

**Forfar-London fruit trains.** Perth and Angus fruit growers have formed an association and will charter special trains to take fresh fruit to London this summer. Each train will cost £500 irrespective of weight carried.

**French railway strike.** The three French railway unions called a 32-hour nation-wide strike on May 18. Originally planned for 40 hours the strike was reduced by the unions to avoid paralysing rail traffic on the evening of May 19, the start of the Whitsun holiday.

**Railways as "social service."** The National Union of Manufacturers has petitioned the Minister of Transport for the continuance of the railways as a "social service." The appeal also asks for the retention of Transport Users' Consultative Committees.

**British Transport Advertising increased income.** The increase in the use of British Transport Advertising services added £215,000 to its income with the result that, once again, it exceeded that for the previous year. Sites booked to sell alcoholic drinks brought in £398,000; the entertainment industry £300,000. The travel, tobacco &



Map issued by the S.N.C.F. to show easy rail accessibility to and from Paris



cigarette industries increased their expenditures by £32,000 and £33,000 respectively, and newspapers & publications advanced by £20,000.

**Country bus route map.** The London Transport Executive has just issued an easy-to-read pocket map of green country area bus services, giving more information and clearer route indications than in previous editions. The map covers an area from Letchworth to Gravesend, Horsham and Aylesbury, and gives full details of 1,500 miles of outer area routes.

**Interavailability of tickets between Scotland and Northern Ireland.** Passengers holding tickets on the direct steamer route between Glasgow and Belfast will be able this summer to travel on any of the other two routes to Northern Ireland, - via Ardrossan or Stranraer and Larne - on payment of any difference in fare. Sailing tickets issued in respect of travel on controlled dates during the holiday season will only be valid for the route specified.

**Last of open forum series.** The North Eastern Region of British Railways held the last of a series of open forum meetings at Brighouse recently. It was held by the special request of the Ashlar & Spen Valley Institute of Further Education and the panel consisted of Mr. J. E. H. Skerratt, Planning Assistant, Traffic Headquarters, York (Chairman); Mr. S. C. Routledge, Assistant District Operating Superintendent, Wakefield; Mr. C. H. Swan, District Motive Power Superintendent, Wakefield; Mr. W. Hargreaves, Assistant District Passenger Superintendent, Leeds, and Mr. C. Ayers, District Goods Superintendent, Leeds, who was also the chief speaker.

## Railway Stock Market

Profit-taking put share prices sharply lower in stock markets prior to the Whitsun holiday, and although buyers were attracted later, demand was more selective than in recent weeks. Annual statements by company chairmen have emphasised that profit margins are narrowing owing to rising costs and increased competition, and there seems little doubt that Mr. Paul Chamber's reference at the annual meeting of I.C.I. to competition at home and abroad has attracted widespread attention. Moreover, the controversy as to whether Britain should join the European common market, which is a big talking point in the City, affected sentiment.

Movements among foreign railway stocks were small and without significance, though Costa Rica ordinary stock held its improvement, with buyers around 44. Chilean Northern 5 per cent debentures marked 49, but Brazil Rail bonds changed hands down to 3.

United of Havana second income stock was 5½, Mexican Central "A" bearer debentures 58, and San Paulo Railway 3s. units were again around 1s. Antofagasta ordinary stock was unchanged at 15½, but the preference stock rallied a point to 33.

Canadian Pacifics were good with Wall Street, moving up to \$47½; the 4 per cent preference stock was 60½ and the 4 per cent debentures 56½. White Pass shares strengthened to \$10½. Elsewhere, Nyasaland Rail-

ways shares were dealt in around 10s. 6d.

Among shares of locomotive builders and engineers, Beyer Peacock 5s. shares at 9s. 1½d. held almost the whole of the rise which followed the past year's results. Charles Roberts 5s. shares were 8s. 3d., but, on balance, Westinghouse Brake gained a further 1s. at 45s. 9d. Birmingham Wagon after an earlier rise, eased to 33s. 3d. North British Loco turned easier at 8s. 6d., but G. D. Peters shares remained firmly held and were again quoted at 18s. 9d. Wagon Repairs 5s. shares, however, have strengthened afresh to 21s. 3d. Gloucester Wagon 10s. shares changed hands around 10s. 3d.

In electricals, A.E.I. has not held the best prices, but at 43s. 6d. was higher on balance, as were G.E.C. at 38s. and English Electric at 35s. 6d. Crompton Parkinson 5s. shares were 14s. 3d. and Mather & Platt improved to 43s. 6d. after an earlier decline. British Oxygen 5s. shares at 26s. 6d. moved higher on balance, but in other directions, Tube Investments came back sharply to 76s. 3d., with the prevailing trend of markets, while Leyland Motors eased to 98s. 3d.

Guest Keen came back to 102s. 7½d., though John Brown have been steady at 47s. 3d. Vickers at 37s. 9d. were helped by the annual report which has increased the view that there would be reasonable prospects this year of maintaining the 10 per cent dividend; at their current price the shares give a not unattractive yield of 5½ per cent. Ruston & Hornsby reacted from 30s. 9d. to 28s. 7½d. at which there is a yield of 6½ per cent on the basis of last year's 9 per cent dividend. T. W. Ward showed a small gain at 84s. 6d., but among other shares, Stone-Platt lost 1s. 6d. at 61s. 9d.

Babcock & Wilcox have been steadier at 34s. Steel shares failed to respond to the prospect of higher steel prices, though the general view is that there are good prospects of dividends being maintained. It seems reasonable to expect that, bearing in mind the good yields, steel shares are likely to attract more attention in due course, but at the present time they are unlikely to move against the general market trend.

In other directions, Pressed Steel 5s. shares at 27s. 1½d. compared with 28s. a week ago. Dowty Group 10s. shares were 40s. 4½d. compared with 39s. 10½d.

## Forthcoming Meetings

May 26 (Fri.). Indian and Pakistan Railways annual re-union dinner, at the Rembrandt Rooms, Brompton Road, S.W.7, at 7 p.m.

May 26-28 (Fri.-Sun.). The Institute of Traffic Administration, annual conference for 1961, at the Grand Hotel, Folkestone.

May 30 (Tue.). The Institution of Civil Engineers, at Great George Street, Westminster, S.W.1, at 5.30 p.m. The Unwin Memorial Lecture: "The work of the Institution's Research Committee," Professor J. F. Baker.

June 1 (Thu.). The Institution of Civil Engineers at Great George Street, London, S.W.1, at 5.30 p.m. "Auckland Harbour bridge: design," Mr. G. Roberts and Mr. A. O. Kerensky, and "Auckland Harbour bridge: construction," Mr. H. Shirley Smith and Mr. J. F. Pain. (Rearranged from May 9.).

June 3-8 (Sat.-Thu.). The Permanent Way

Institution, annual summer convention, at Newcastle upon Tyne.

June 5 (Mon.). The Historical Model Railway Society, London section at Keen House, Calshot Street, London, N.1, at 7 p.m. "The Settle & Carlisle Line," Mr. N. Wilkinson.

June 15 (Thu.). The Model Railway Club at Keen House, Calshot Street, London, N.1, at 7.45 p.m. "The Southwold Railway: Part 2—The Model." A talk by Mr. E. R. Boston.

June 15-24 (Thu.-Sat.). International Construction Equipment Exhibition, Crystal Palace, London.

## OFFICIAL NOTICES

### RAILWAY ELECTRIFICATION

**TENDER FOR TRACTION SUBSTATIONS AND SWITCHING STATIONS FOR RAILWAY ELECTRIFICATION ON THE 25 KV., 50-CYCLE, SINGLE-PHASE A.C. SYSTEM ON THE TAMBARAM-VILLUPURAM SECTION OF THE SOUTHERN RAILWAY.**

THE General Manager & Chief Engineer, Railway Electrification (Ministry of Railways, Government of India) invites tenders from competent and experienced contractors for supply, erection, testing and commissioning of equipment for the traction substations and the switching stations for the section Tambaram-Villupuram of the Southern Railway.

Tender Papers containing Instructions to Tenderers, Conditions of Tendering, Conditions of Contract and Specifications may be purchased from the office of the General Manager & Chief Engineer, Railway Electrification, 235, Acharya Jagadish Bose Road, Calcutta-20 on and from May 15, 1961, on payment of Rs. 100.00 (£7 10s. 0d.) per copy which shall be deposited in cash with the Cashier, Railway Electrification, 232, Acharya Jagadish Bose Road, Calcutta-20 or sent by money order to the above-named official.

Tenders shall be submitted in 5/7 copies in accordance with the instructions given in the Tender Papers, to the office of the General Manager & Chief Engineer, Railway Electrification at or before 3 p.m. I.S.T. on August 16, 1961.

The earnest money to be deposited for each tender is rupee twenty thousand (£1,500). A security deposit of rupees one lakh (£7,500) will have to be made by the successful Tenderer on placing of the order. All relevant particulars are available in the Tender Papers, but any clarification required will be given by the General Manager and Chief Engineer, Railway Electrification.

Tenders will be opened at 3.30 p.m. on August 16, 1961, in the presence of Tenderers, if any, at the office of the General Manager and Chief Engineer, Railway Electrification.

On no account will the last date of tendering be extended.

### CORAS IOMPAIR EIREANN

#### RAILWAY ROLLING STOCK FOR SALE

The Board of Coras Iompair Eireann invites offers for the purchase of the following Rolling Stock which is in good operating condition and suitable for 3-ft. gauge.

One Walker Diesel Mechanical Locomotive of Bo-Bo type fitted with two engines of 112 h.p. each engine, driving through cardan shafts to the opposite bogie. Total weight of locomotive—23 tons. Adhesive weight—23 tons. Maximum axle load—5.78 tons. Year built—1955. (Two similar locomotives will be offered for sale in December, 1961, and options for the purchase of these two locomotives will be considered.)

Four Walker Diesel Railcars consisting of one power bogie and one trailer bogie incorporating one 6 LW Gardner type engine driving through gearbox to two axles coupled by outside rods. Total weight—14.35 tons. Maximum axle load—4.98 tons. Year built—1952.

Three Second Class Coaches of lightweight construction with seating for 38 passengers. Tare weight—7 tons.

The Rolling Stock may be inspected at Ennis, County Clare, Ireland, by arrangement with the Mechanical Engineer, Coras Iompair Eireann, Inchicore, Dublin, 8 (Telephone No. 52355) from whom further information may be obtained on application.

Offers, in a sealed envelope, marked "Offers for Rolling Stock" should be submitted to the Secretary, Coras Iompair Eireann, Kingsbridge Station, Dublin, so as to reach him not later than August 30, 1961.

The Board does not bind itself to accept the highest or any offer.

M. J. HAYES, Secretary

CORAS IOMPAIR EIREANN  
Kingsbridge Station, Dublin, Ireland.





## DIESEL ELECTRIC LOCOMOTIVES



*AEI Type 1 Diesel Electric Locomotives  
for British Railways (Photo by  
Clayton Equipment Co. Ltd.).*

AEI have orders for 44 of these 800 h.p. diesel electric locomotives for British Railways. The mechanical parts were sub-contracted to the Clayton Equipment Co. Ltd., and locomotives are seen here under construction.

AEI equipment is supplied throughout the world.

*Enquiries to AEI Traction Division,  
Trafford Park, Manchester 17, or your local AEI Office*



**Associated Electrical Industries Ltd.**

**Traction Division**

**MANCHESTER and LONDON**

K/T002



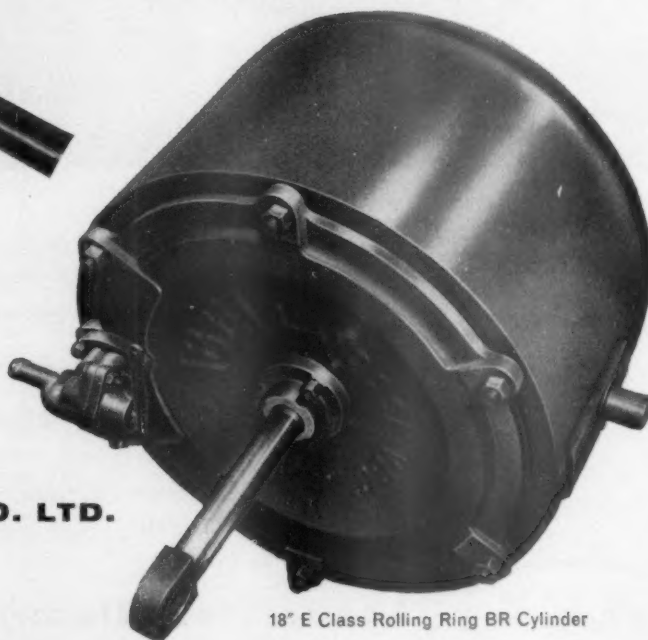
In your hands

**POWER TO STOP!**

**MOST** Railway Rolling Stock, at home and overseas, relies on  
**VACUUM BRAKES**



Driver's Vacuum  
Brake Valve



18" E Class Rolling Ring BR Cylinder

**THE VACUUM BRAKE CO. LTD.**

VICTORIA WORKS,  
MILLHOUSES, SHEFFIELD 8

Member of the  **Birfield Group**

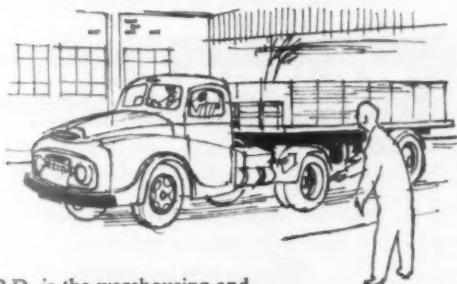
# UNILEVER COMPANIES

## use

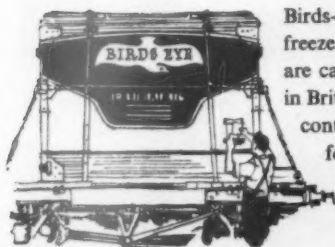
# BRITISH RAILWAYS

## Modern Freight Services

Unilever Companies transport many tons of their raw materials and finished products with the help of British Railways. There are more than 800 Express Freight trains time-tabled every weekday, many giving next morning arrivals over long distances. From many towns British Railways



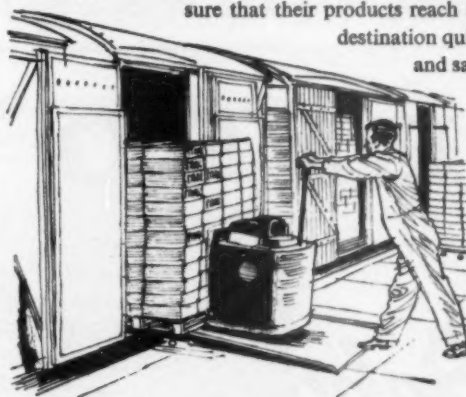
S.P.D. is the warehousing and distributing associate of Unilever Ltd. Many of its depots are connected with rail sidings and take delivery direct from British Railways pallet vans.



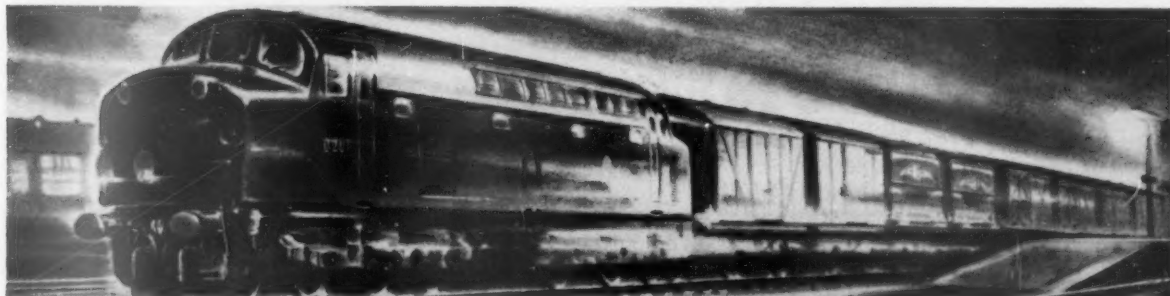
Birds-Eye Foods Ltd. quick-freeze a variety of foods which are carried across the country in British Railways refrigerated containers specially designed for the purpose, ensuring that the foods are kept in perfect condition.

Export Express services give assured next-morning delivery for wagon-load traffic to London Docks (Royal, India & Millwall Groups), Merseyside, Manchester, Goole, Grimsby, Hull, Glasgow, Grangemouth & Southampton. Charges are fully competitive: ask your local Goods Agent for details.

Van den Berghs & Jurgens Limited make a wide variety of margarines and cooking fats which are delivered by British Railways pallet vans to S.P.D. depots throughout the country. By using British Railways, Van den Berghs & Jurgens Limited, like other Unilever Companies, ensure that their products reach their destination quickly and safely.



**BRITISH RAILWAYS**





## BERESFORD COACH FITTINGS

There have been Beresford Fittings on many of the world's leading railways for over three quarters of a century—and all that experience is embodied in today's products—experience which our customers find invaluable. Beresford Fittings are built to withstand even today's rough usage and to give long service with the minimum of attention. We make a very wide range of locks, window fittings, pedal-operated W.C.'s catches, ventilators, luggage racks, folding and corner basins, etc., to standard designs, but most fittings can be made to customer's own designs. We will be pleased to send you illustrations of some of our products on request.

Beresford folding wash basins save space and look neater. They are robust, practical and efficient. Several designs are available, and materials include stainless steel, white metal and anodised aluminium.



J23

### BERESFORD

**JAMES BERESFORD & SON LIMITED**

(Member of the Cornacraft Group of Companies)

Ace Works, Kitts Green, Birmingham, 33. Tel.: Stechford 3081  
Branches at: London, Leeds, Manchester, Glasgow, etc.

## DENSO

*fights*

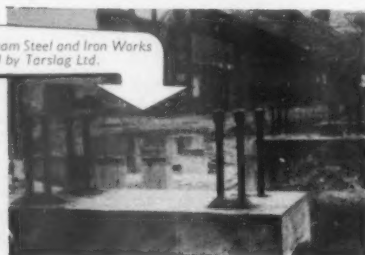
Wherever the location, whatever the climate, DENSO has proved successful in fighting the battle against corrosion the world over.

Illustrated are three of the many important projects where the DENSO Anti-Corrosion Service has played its part in defeating the corrosion menace.

## CORROSION

The DENSO free advisory service is available to help you with your corrosion problems.  
Specialists in anti-corrosion treatment for over 30 years.

Anchor bolts at South Durham Steel and Iron Works Ltd. Site. DENSO protected by Torslag Ltd.



The Tensioning Cables on the side towers of the new Forth Road Bridge are DENSO protected.



Applying DENSO Tape to tubular roof members of new swimming bath for Co. Borough of Walsall.



**WINN & COALES LTD**

DENSO HOUSE CHAPEL ROAD  
LONDON S.E.27

Agents throughout the Commonwealth

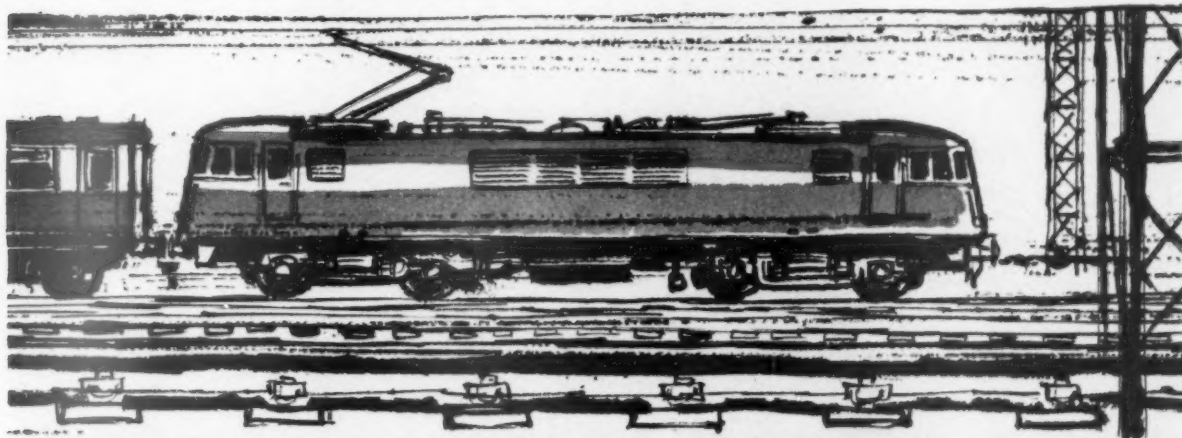
London—Tel.: GIPay Hill 7511  
(10 lines)

Manchester—(Also Contracting  
Dept.) Tel.: Sale 8271

Belfast—Tel.: 50623

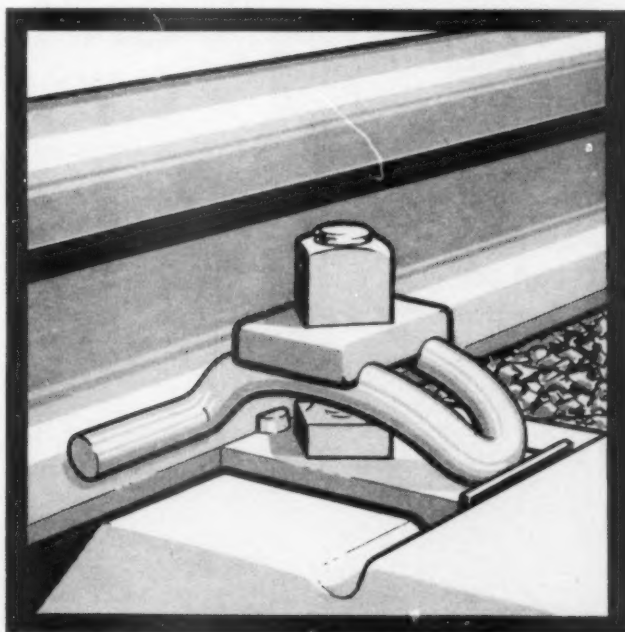
Dublin—Tel.: 61766





# KEEP TRACK

Today's 100 m.p.h. traffic makes big demands on the track. To help cope with this problem, Bayliss, Jones & Bayliss have developed resilient rail fastenings for use with concrete sleepers and long welded rails. Approved by the British Transport Commission, these tough spring steel fastenings are the latest additions to the BJB range, which still includes, of course, many traditional types of fastening.



**BAYLISS, JONES & BAYLISS LIMITED**

Head Office: Victoria Works, Wolverhampton. Tel: Wolverhampton 20441

London Office: GKN House, 22 Kingsway, London, W.C.2. Tel: CHA 1616





## In Italy

THEY SAY  
'GELATO' FOR ICE CREAM

but

BECLAWAT FOR WINDOWS

Manufacturers of windows and door gear  
for transport in the United Kingdom,  
Australia, Canada, India, South Africa  
and Sweden.



BECKETT, LAYCOCK & WATKINSON LTD., ACTON LANE, LONDON, N.W.10

It's NEW!

\*  
It's the low priced hoist  
—with the lowest headroom!



The 'Goliath' Electric Chain Hoist (Series 1) has been designed to provide a high efficiency lifting unit with a minimum of headroom at a competitive price.

The weight of the hoist has been kept to a minimum by the use of high tensile light alloy (e.g. the 1-ton hook-in type hoist weighs only 120-lb.). The speeds of lift have been kept high enough to provide quick and efficient handling.

viz.:  
10-cwt. ... 40 ft. per min.  
1-ton ... 20 ft. per min.  
2-ton ... 10 ft. per min.  
\* 1-ton trolley type — £155  
\* 2-ton hook type — £153

For further details of this outstanding new hoist  
write for your copy of fully illustrated brochure.



**LIFTING GEAR PRODUCTS (ENGINEERING) LTD.**  
GOLIATH WORKS, PETRE STREET, SHEFFIELD 4  
Telephone: Sheffield 387067 (P.B.X.)

on top of  
every job



Overhead installation and maintenance is a job for the Simon Hydraulic Platform. At the touch of a control it lifts men and equipment up, down, across or around, reaching the precise working spot in seconds. Truck, trailer or lorry-mounted models are available with working heights from 25 ft. to 54 ft.

Photo by courtesy of British Railways and B.I.C.C.

**SIMON**  
**HYDRAULIC PLATFORM**

For details and demonstration, write or telephone:  
**SIMON ENGINEERING Dudley LTD.**  
Queen's Cross, Dudley, Worcs. Dudley 54661.

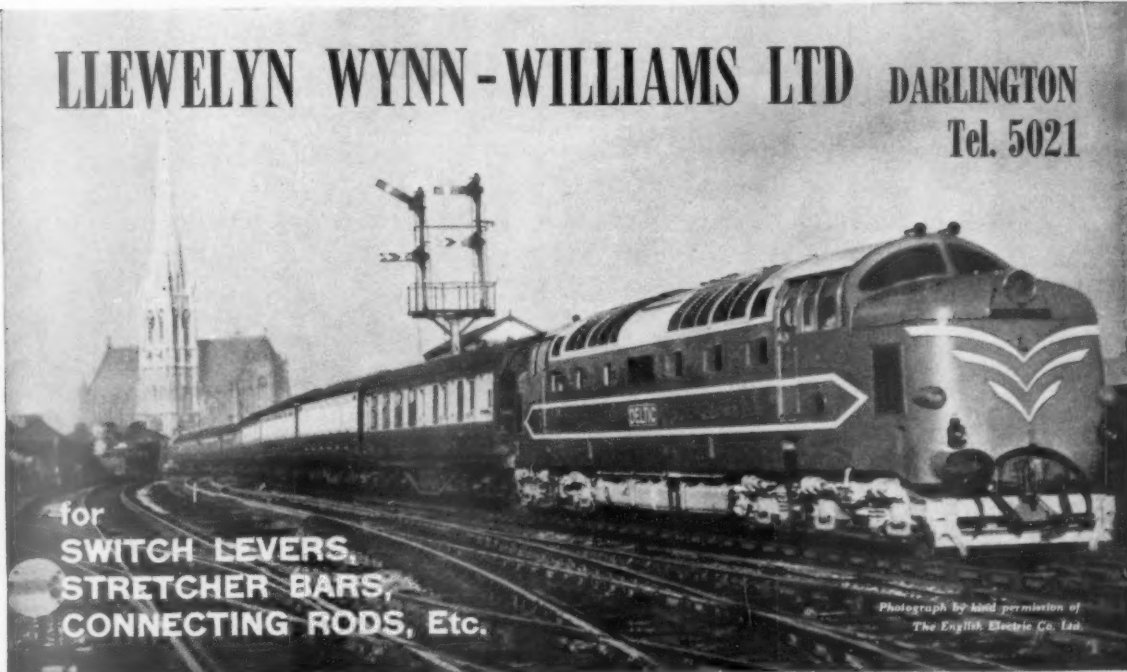




**COMPLETE  
PROTECTION**  
OF DIESEL RAILCAR  
TRANSMISSION

by **PUROLATOR** **FILTERS**   
REGD. TRADE MARK  
ONE OF THE  
AUTOMOTIVE PRODUCTS GROUP  
AUTOMOTIVE PRODUCTS COMPANY LTD · LEAMINGTON SPA · WARWICKSHIRE · ENGLAND

**LLEWELYN WYNN-WILLIAMS LTD** **DARLINGTON**  
**Tel. 5021**



for  
**SWITCH LEVERS,  
STRETCHER BARS,  
CONNECTING RODS, Etc.**

Photograph by kind permission of  
The English Electric Co. Ltd.



Bagnall King Dick, Ltd.	—	Clyde Rubber Works Co., Ltd.	—	Hasler Telegraph Works, Ltd.	—	Monarch Controller Co., Ltd.	—	Smith, John (Keighley), Ltd.	—
Aircraft Marine Products (Gt. Britain), Ltd.	—	Cobra (Wood Treatment), Ltd.	—	Henderson & Keay, Ltd.	—	Murex Welding Processes, Ltd.	—	S.P.E. Co., Ltd.	—
Alfco Water Treatments Service	—	Cockerill, S.A., Ougree	35	Henkel Werke, G.m.b.H.	—	National Provincial Bank	—	Spencer Moulton, George, & Co., Ltd.	—
Alldays & Onions, Ltd.	—	Colvilles, Ltd.	32	Hitachi Ltd.	—	Neal, R.H., & Co., Ltd.	—	Standard Telephones & Cables, Ltd.	13
Allen, Edgar, & Co., Ltd.	—	Commonwealth Sales Corporation	—	Hoffmann Manufacturing Co., Ltd.	20	Newton Bros. (Derby), Ltd.	—	Steel Coy. of Wales, Ltd.	—
Allgemeine Elektrizitäts Gesellschaft	—	Consolidated Pneumatic Tool Co., Ltd.	15	Holman Bros. & Co., Ltd.	—	Niff Batteries, Ltd.	—	Steel, Peech & Tozer	—
Andre Rubber Co., Ltd.	—	Conveyancer Fork Trucks, Ltd.	—	Howard Pneumatic Engineering Co., Ltd.	—	Nippon Signal Co., Ltd.	—	Steels Engineering Products, Ltd.	—
Armstrong Patents Co., Ltd.	—	Cooper, Geo., & Sons	—	Hudswell Clarke & Co., Ltd.	—	North Bar Tool Co., Ltd.	—	Stirk, John, & Sons, Ltd.	—
Asquith, Wm., Ltd.	—	Coventry Machine Tool Works, Ltd.	—	Hunslet Engine Co. Ltd.	—	North British Locomotive Co., Ltd.	—	Stone, J., & Co. (Deptford), Ltd.	—
Associated British Machine Tool Makers, Ltd.	38	Cowans, Sheldon & Co., Ltd.	—	Hyde, Robert, & Son Ltd.	—	Nuts & Bolts (Darlaston), Ltd.	—	Stream Line Filters, Ltd.	—
Associated Electrical Industries (G.R.S.), Ltd.	—	Craven Bros. (Manchester), Ltd.	21	Hymatic Engineering Co. Ltd.	—	Oleo Pneumatics, Ltd.	—	Suffolk Iron Foundry (1920) Ltd.	—
Associated Electrical Industries (Manchester), Ltd.	41	Cravens Limited	—	Illingworth, E., & Co., Ltd.	—	Ormerod Shapers, Ltd.	—	Sulzer Bros. (London), Ltd.	—
Associated Electrical Industries (Rugby), Ltd.	—	Crompton Parkinson, Ltd.	—	Imperial Aluminium Co., Ltd.	24	Osborn, Samuel, & Co., Ltd.	—	Summerson, Thos., & Sons, Ltd.	17
Associated Electrical Industries (Woolwich), Ltd.	—	Davey, Paxman & Co., Ltd.	—	Imperial Chemical Industries, Ltd.	—	Ottermill Switchgear, Ltd.	—	Swiss Industrial Company	—
Associated Lead Manufacturers, Ltd.	—	Davies & Metcalf, Ltd.	10, 11	Interchangeable Tool Co., Ltd.	—	Owen & Dyson, Ltd.	—	Swiss Locomotive & Machine Works	7
Atlas-Copco A/B	—	Dean, Smith & Grace, Ltd.	—	International Twist Drill Co., Ltd.	—	P. & M. Co. (England), Ltd.	—	Sylgas Company, The	—
Auster, Ltd.	—	Dockers Brothers	—	Ica Foundry, Ltd.	—	Palnut Co., Ltd., The	—	Talbot Waggonfabrik	—
Austin Taylor Electrical Ltd.	—	Dorman Long (Africa), Ltd.	—	Isotermos, Société Internationale des Applications	—	Parkinson Cowan Industrial Products, Ltd.	—	Tanges, Ltd.	—
Automotive Products Co., Ltd.	47	Dowty Electrics Ltd.	—	Jackson Vibrators, Inc.	—	Parkinson J., & Son (Shipley), Ltd.	—	Tarmac Roadstone Ltd.	—
Bagnall, W. G., Ltd.	—	Dragonair, Ltd.	—	Kay, Joseph, & Sons, Ltd.	—	Paterson Hughes Engineering Co., Ltd.	—	Taylor Bros. & Co., Ltd.	—
Baker, John, & Bessemer, Ltd.	—	Drewry Car Co., Ltd.	25	Kearns, H. W., & Co., Ltd.	—	Pearson Machine Tool Co., Ltd.	—	Taylor Bros. (Sandiacre), Ltd.	—
Bayliss Jones & Bayliss, Ltd.	45	Drummond Asquith, Ltd.	—	Kendall & Gent, Ltd.	—	Pel, Ltd.	—	Taylor Rustless Fittings Co., Ltd.	—
Beckett, Laycock & Watkinson, Ltd.	46	Du Pont (United Kingdom) Ltd.	—	Kenitra Co., Ltd.	—	Permal, Ltd.	40	Tees Side Bridge & Engineering Works, Ltd.	—
Belships Co., Ltd., Skiba A/S	—	Eagle Construction Co., Ltd.	—	King, George, W., Ltd.	39	Peters, G. D., & Co., Ltd.	6	Telephone Manufacturing Co., Ltd.	—
Benjamin Electric Co., Ltd.	—	Elastic Rail Spike Co., Ltd.	—	Kisha Seizo Kaisha, Ltd.	—	Philips Ltd.	—	Thermit Welding (Gt. Britain), Ltd.	—
B.E.N. Patents, Ltd.	—	English Electric Co., Ltd.	22, 23	Kitchen & Wade, Ltd.	—	Plasser & Theurer	—	Thomas, Richard, & Baldwin, Ltd.	—
Beresford, James & Son Ltd.	44	English Steel Corporation, Ltd.	—	Klocker-Humboldt-Deutz, A.G.	18	Powell Duffryn Engineering Co., Ltd.	—	Thompson, John, Motor Pressing, Ltd.	—
Berry, Henry, & Co., Ltd.	—	E.N.V. Engineering Co., Ltd.	—	Krauss, Maffei A.G.	—	Preformed Line Products (Gt. Britain), Ltd.	—	Thomson, Thomas, Sons & Co. (Barrhead), Ltd.	—
Beyer, Peacock, Ltd.	—	Ericssons Signalaktiebolag, L.M.	—	Kretz, P. Ing., Dipl.	—	Pressed Steel Co., Ltd.	—	Toledo Woodhead (Sheffield), Ltd.	—
Beyer, Peacock Gorton, Ltd.	—	Eutectic Welding Alloys Co., Ltd.	—	Krupp, Fried., Maschinenfabriker Georg Schaefer & Co.	—	Provident Mutual Life Assurance Association	—	Town, Fredk., & Sons, Ltd.	—
Beyer, Peacock (Hymek), Ltd.	—	Expanded Rubber Co., Ltd.	—	Kyosan Electric Mfg. Co., Ltd.	—	Railko, Ltd.	—	Transport Brakes, Ltd.	—
Beyer, Peacock, Railway Equipment, Ltd.	—	Eyre Smelting Co., Ltd.	—	Lace Web Spring Co., Ltd.	—	Railway Signal Co., Ltd.	—	Transport Engineering & Equipment, Ltd.	—
Birfield Industries, Ltd.	42	Fairclough, Leonard, Ltd.	—	Lamp Manufacturing & Railway Supplies, Ltd.	—	Ransomes & Rapier, Ltd.	—	Trico-Folberth, Ltd.	—
Birkett, T. M., Billington & Newton, Ltd.	—	Falk, Stadelmann, & Co., Ltd.	—	Lang, John, & Sons, Ltd.	—	Rawlings Manufacturing Co., Ltd.	—	Tulloch, Ltd.	—
Birmingham Railway Carriage & Wagon Co., Ltd.	—	Fawcett Preston & Co., Ltd.	—	Lamigraph Ltd.	—	Regent Oil Co., Ltd.	—	Turton, Geo., Plaws & Co., Ltd.	—
Bolton Gate Co., Ltd.	—	Ferguson Battery Co., Ltd.	—	Lansing Bagnall, Ltd.	—	Reynolds, A., & Co., Ltd.	—	Tyler & Co., Ltd.	—
Bolton, Thos., & Sons, Ltd.	—	Ferodo, Ltd.	—	Laycock Engineering, Ltd.	—	Rhein Stahl Sieger Eisenbahnbedarf, A.G.	—	United Steel Companies, Ltd.	—
Bonded Laminates Ltd.	—	Fibreglass, Ltd.	—	Le Carbone (Great Britain), Ltd.	—	Richards, Chas., & Sons, Ltd.	—	Vacuum Brake Co., Ltd.	42
Booth, James, Aluminium Ltd.	—	Finlay Engineering, Ltd.	—	Leeds Engineering & Hydraulic Co., Ltd.	—	Roberts, Charles, & Co., Ltd.	—	Vokes, Ltd.	—
Bowmaker (Plant), Ltd.	—	Fined Engineering Co., Ltd.	—	Levick, John, Ltd.	—	Roberts, J. W., Ltd.	—	Vulcanised Fibre, Ltd.	5
Boydell, E., & Co., Ltd.	—	Fletcher Engineering Co., Ltd.	—	Lifting Gear Products (Engineering), Ltd.	46	Rolls-Royce, Ltd.	—		



**TIMKEN**  
tapered roller bearings

This advertisement appeared in  
The 'Railway Gazette'

September 16th  
1955

#### Fourteen in a row

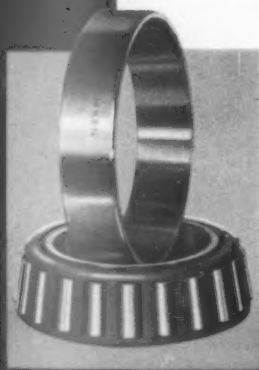
This illustration is unusual and interesting. It shows the wheelsets of a Class 59 Beyer-Garratt locomotive built by Beyer, Peacock & Co. Ltd. for the East African Railways. The wheel arrangement is 4-8-2+2-8-4 and every axle runs in a Timken cannon box. This is the first locomotive in the world to be equipped with cannon boxes on all axles.

The cannon boxes are of the well-known split type, providing for easy inspection of the axle and bearings, and having the characteristic advantage of widespread and positive alignment of the two Timken tapered roller bearings.

## ...and now, the Main Crank Pins

Following their five years' successful experience with Timken bearings on the Class 59 Beyer-Garratt Locomotives, the East African Railways have recently placed an order for 25 sets of Timken bearings for the four main crank-pins on these locomotives. The bearing installation was designed to utilize the existing coupling and connecting rods.

British Timken, Duston, Northampton, Division of The Timken Roller Bearing Company. Timken bearings manufactured in England, Australia, Brazil, Canada, France and U.S.A.

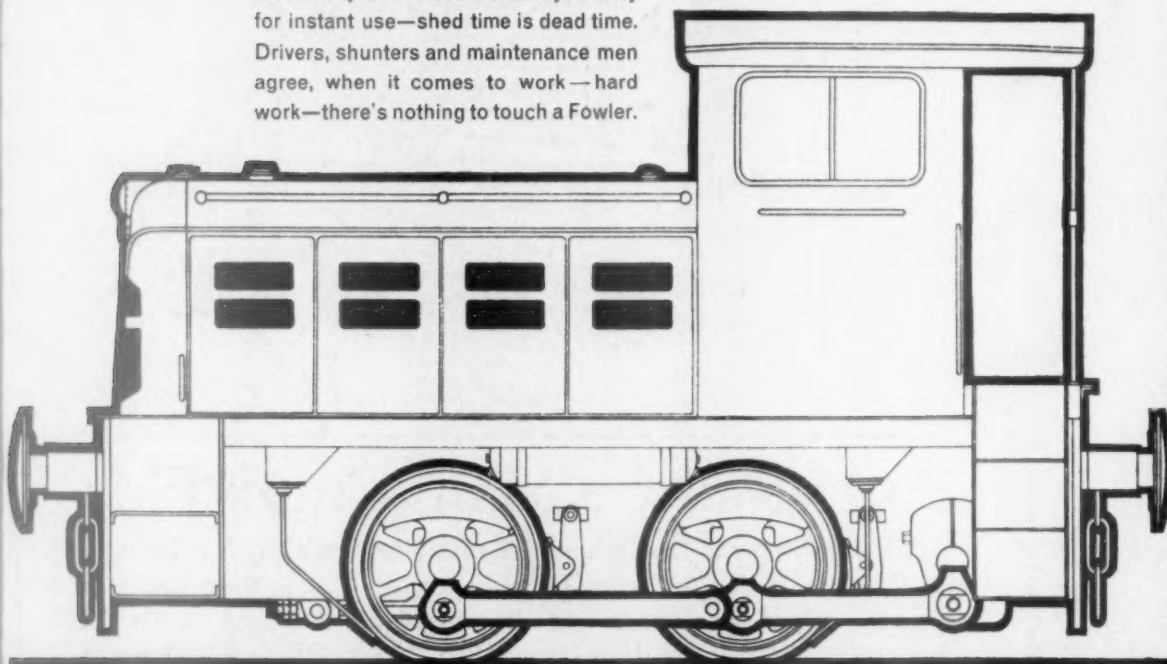


**TIMKEN**<sup>®</sup>  
REGISTERED TRADE-MARK  
tapered roller bearings

# FOWLER

**MEANS  
FASTER  
HANDLING**

Everything about a Fowler diesel shunter spells functional efficiency. With finger-tip control and all-round visibility it's simple, and non-tiring to drive. Maintenance requirements are even simpler, that's why this diesel is always ready for instant use—shed time is dead time. Drivers, shunters and maintenance men agree, when it comes to work—hard work—there's nothing to touch a Fowler.



*There is a wide range of Fowler diesels fully described in this new technical leaflet, gladly supplied on request.*

**JOHN FOWLER & COMPANY (LEEDS) LTD, LEEDS 10, TEL: 30731**



